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Directors of Creation

An Anthropology of Capitalist Conjunctures in the Contemporary

Doctoral thesis
for the degree of Philosophiae Doctor

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Norwegian University of Science and Technology
Faculty of Social Sciences and Technology Management
Department of Social Anthropology

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‘As the world, deep down
lay at God’s eternal breast,
He arranged for the first hour
With sublime joy of creation (Schöpfungslust),
And he spoke the word: let there be light!
Then a cry of pain sounded,
As reality with all its power
broke into being.’

Goethe, Divan, Buch Suleika.[1]

‘Als die Welt im tiefsten Grunde
Lag an Gottes ewger Brust
Ordnet er die erste Stunde
Mit erhabner Schöpfungslust
Und er sprach das Wort: Es werde!
Da erklang ein schmerzlich Ach!
Als das All mit Machtgebärde
In die Wirklichkeiten brach’

[1] Quoted in Reinert and Reinert (2006: 59-60).

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Nonetheless the most special thoughts are for my family. To Live for all her support, and not the least to the ruby's of my life: Ruben, Ylva, and Charlotte. Notwithstanding the complexities of both the nature/nurture debate and the inner workings of the cosmos, a thought goes also to my parents who must bear at least some responsibility for my existence and thus for the products of my work.

Finally and probably needless to say, although entangled minds have enabled this thesis, the responsibility for its content is mine alone.

Prologue

I left for my first ethnographic fieldwork as a master student in anthropology to an urban gypsy district in Bulgaria. The contrast to the self-evidently assured situation while growing up in Norway and to the "chattering" middle-class environment during my previous years of study was in many aspects of life radical. I spent most of the time with my gypsy "extended family", visiting other friends and families and people they knew of every type. I was also introduced to local politicians and to the arguably worst slum in the whole of Bulgaria, denied out of existence by members of the city's own middle-upper class; the one square kilometer bricked wall "tsiganska mahala" with the symbolic name "Nadezhda" ("Hope").

It was located in Sliven, just behind the central train station in the same city were I lived, and I went there several times and always felt utterly sickened by the situation. Naked or in threadbare clothes, dirty children running around in the muddy small alleys, cold and hungry, elderly sitting on top of garbage in their small brick wall enclosures called homes, often without roof and anything resembling furniture, maybe holding a sick child in need of medications or an operation in their hands; insects and deceases, swollen stomachs, and filarial induced elephantiasis; and myself being followed by crowds of people, both cheered as a possible help and shown around, while also spitted upon by others because of what they perceived of (to some extent quite adequately) as slum tourism. And the winters are freezing cold. At the far end, in the midst of this mainly Muslim gypsy ghetto, a small orthodox Christian "church", made of dirty stone bricks, were you almost needed to crawl to enter inside because of the small "door", a few worn out wooden benches and a desperately looking "holy man". And then, afterwards talking to the, very possibly corrupt, administrators of the place. Subsequently, talking with people in the city, politicians as well, who didn't even "know" about the ghetto's existence.

But then again, a fraction of the time in Bulgaria I spent traveling and talking to officials and organizations that were trying in various ways to remedy the tragic poverty

of the gypsies. For example I met with various emissaries representing the European Union, traveling with private chauffeurs in black cars with bistre windows, holding aristocratic names and titles almost longer than their classical and fancy business card could carry, and symbolically signifying a fund checkbook that could support the entire "Nadezhda" mahala. I met with international organizations like the Soros funded "Open Society Institute", national research institutions, foreign investor companies, and recently established gypsy foundations. After one such meeting in Sofia I traveled back to Sliven in a fancy car together with one foreign business investor. He wanted to drive me all the way into my gypsy mahala, but politely, contemplating problems with role incongruence, I asked to be let off at a "safe" distance downtown.

Watching a version of capitalist market economy emerge in real time, corrupt, warts and all, was at the time both fascinatingly concrete and frustratingly intangible at the larger scales. Sensing the way big money slipping off illegally into all the wrong pockets, watching poverty not improving the bit, and without a thorough understanding of the larger processes producing this situation, was unsatisfactory to say the least. Being there, I learned a lot about the day-to-day trials and tribulations, but also the finely tuned strategies and complexities involved in carving out pockets of possibilities. However, I felt I never grasped the large-scale economic and ideological causes of the intense poverty displayed in the gypsy communities. The inequalities were gargantuan, but the structural reasons, other than the open racism virtually everywhere, was difficult to comprehend.

After completing my studies I was employed as a researcher at Sintef, the largest independent contract-based research foundation of Scandinavia. Focusing on the emerging "knowledge society" and "knowledge economy", for several years I have worked in various projects collaborating with organizations both the private and public sector; themes like organizational development and learning, knowledge management and strategic processes have been explored. A world of business and industry, a world of consultancy managers, a world of modern bureaucracies and formal organizations, a world of capitalist corporations, and of professional experts and elites. I entered

unfamiliar organizational environments, engaged in experiences of technical experts and leaders in the modern economy, displaying a variety of interesting themes, contrasts and dilemmas. But because most projects were confined to Norway it was not really until my first research project in China that the really "real" contrasts in terms of economic inequality was significantly felt again.

By this time I had also formally embarked upon my PhD work in social anthropology. Now I was suddenly also a research "student" investigating in some sense relations of asymmetry again, but now from the other side, as it were. "Living" the international corporate manager or "expat" professional life, walking past the beggars on the crowded streets on my way to fancy high-end hotels, passing the broomstick sweepers standing in the middle of the dusty highways from the back seat of new American cars, driven by a private chauffeur on the way to an industrial plant. Rather than taking small trips to the affluent side of the divide, so to speak, now I made small detours out on the line of poverty and despair.

What could be more interesting for me, although nurturing few ideas about where I finally would end while embarking upon this research adventure, than to explore the patterns and ambiguities of contemporary conjunctures of globalized capitalism; discovered through the central prism of managing advanced international industrial investment projects in a so-called "global" corporation. It enabled a close-up investigation of core practices of present day economic value and wealth creation. While arguing that the wealth creating processes instantiated by Hydro practices are exemplary in terms of their potential in *escaping* from poverty on larger societal scales, the investigations in this landscape have by analytical implication, as it were, and by historical and statistical documentation, also enabled insights into the opposite processes of exclusion, economic inequality and asymmetrical reproductions. And not the least it enabled an understanding of the legitimating forms of rationality underpinning these processes.

Introduction: Investment Projects, Corporations and Capitalism

"Last year, I think we had eight days when we actually could see the sun." The driver behind the wheel of the new GM car is twisting and turning through the mind-boggling traffic in Xi'an, China, one of the world's most polluted cities. He drives with authority, not aggressive but with confidence and concentration. Something highly appreciated by us passengers. He passes the many creatively constructed vehicles inhabiting the roads. From walking-carts and bicycle-tractors to massive trucks spewing black exhaust. The General Manager of Hydro's new magnesium alloy plant, located at the fringes of the city, looks out of the car window. Peering at the people and traffic outside, and the all-encompassing smog. A visualization of the characteristic smell with which he had long since been familiarized.

Outside, old people are doing the morning line gymnastics, tai chi, beneath voluminous interchanges, both in different ways aesthetically beautiful in their lines and movements. And some contrast. A great number of people walking, bicycling and driving to work. Shops opening, sweepers cleaning the streets, standing in the middle of the road, not looking up and hardly noticing the cars, our car, rushing by at high speed. Seemingly without fear of death. Almost every time you watch the traffic through the car window you anticipate an accident. "I think I see a serious, possibly lethal, accident about once a week", the manager said, somehow reading my thoughts. "Safety at the plant is a big issue, I'll tell you. I don't drive here myself, no chance. In Shanghai or Beijing I'll do it. Here, no way. But you know, even here it is somewhat civilized. When traveling around to find the location for our plant, we went to Ningxia, virtually on the border to Inner Mongolia, Elkem has a plant up there. Our first day we saw people driving around with "pigs and carts", and when we came across a dead guy just lying there along the street, people didn't seem to take any notice, we had second thoughts. Xi'an was as more or less the farthest from the east coast it was possible to go, I guess. And here we are also close to our suppliers, and the infrastructure is good. It is a fascinating adventure."

"My business travels [from China] to Europe is exhausting, and the understanding of that situation by the European head-office is not developed. This because their minds circulates around Europe only. Next week I will go to a meeting in Brussels for 2,5 hours, with a traveling time of more than 15 hours each way. One phenomenon is that the time in China is rushing. I remember saying that I am in China since two weeks, now it's one-year and the speed has still not changed. If it's my age, or the bad short-

> term memory all elderly people suffer, I don't know. It's good and bad … Sometime I'm asking what I will or like to do next, my standard answer is: retire… We will see what a refugee has to face next. My parents were refugees from the World War II, consequently I'm a modern refugee. In two weeks, on my 52nd birthday, I will have had 20 different post addresses in 5 different countries, and will have worked in 6 countries. Moving around, no problem, staying at one place… the future will show."
> (Hydro expatriate manager in China. Diary entry, August 25, 2005.)

It was "a dark, rainy day", as the story goes, that particular Saturday in 2005. Nevertheless, it was the evening of the most gargantuan popular culture happening in Norwegian history. Frognerparken in Oslo, the huge park in the heart of the Norwegian capitol famous for its fantastic stone sculptures made by Gustav Vigeland, of nude people in all possible and impossible positions, was the site for the happening. Hydro celebrated this year it's centennial and hosted this particular day the most monumental of several cultural happenings and activities. A hundred years as a company on the world stage. Norway's most successful, important and international industrial corporation. Ever. With a global outlook since its inception in 1905. The same year, incidentally, Norway could celebrate its independence from the union with Sweden.

After recently establishing two of Hydro's three major businesses as separate companies listed on the stock exchanges, in 2007 Hydro as a dedicated aluminium company looked like this: 25 000 employees doing operations in more than 30 countries, with an annual turnover above 100 billion NOK, and a "market value" in the same area. Despite some moral and emotional ambivalence, they had to make it big. An audience of 120 000 people attended, an impressive new record for a country with about four million people, and a city (including the surrounding areas) of about one million. Of course, the band that was attracting the crowds was 'A-ha', the only truly international pop music success ever to have come out of Norway's music scene. Conquering the world stage of pop music in the late 1980s. Now a more mature band, reunited and offering new material for the first time since their former heydays. An appropriate analogy to the aging but still very much viable Hydro corporation. The concert received mixed applause in the newspaper reviews the day after. Still, the record

breaking ocean of people swinging and swaying collectively to the music is imprinted in the historical book of Norwegian social gatherings.

Later was Hydro's centennial "birthday party" celebrated in various ways on the same day at all their sites throughout the world. In Høyanger, a small city in the west-coast rural areas of Norway, the centennial celebration was cancelled. Recently the local community, were Hydro has been the cornerstone company, had received the decision that Hydro would close-down its "Søderberg-production lines" from 2006. They chose not to reinvest in new production lines, when the old lines had to be shut down because of pollution requirements. The same thing in Årdal, another of the key rural, cornerstone Hydro production sites. 120 jobs in Høyanger and 210 in Årdal would be affected. No centennial celebration at the latter location either. A few years earlier they decided to closed down their magnesium business at Herøya, one of the sites evoking the pretence of Hydro history and signifying strongly their "culture and tradition". Simultaneously they we're establishing their magnesium plant in China, among the projects investigated in the present work. In all of the instances employees protested and politicians capitalizing on the situation and criticizing Hydro management. The ghost of unemployment was called upon. Huge media outcries. Hydro was seen as betraying not only the local communities, but its responsibilities as a Norwegian institution.

In 2006, after participating at the annual Hydro shareholder meeting, having recently bought five Hydro stocks to get the invitation, I accidentally stumbled across a top official from Høyanger. "When the decision of closing down were imminent", he said, "we mobilized the people. We walked the streets in protest marches. We made a stir." He left the impression hanging that it was mostly to put on a show. To make it political. "When the decision came, definitively, then we rolled up our sleeves, and went to work. Our job was then to squeeze as much money as possible out of Hydro." He was very happy with the result. After the media-storm, the protest-marches, and various politicians heavily criticizing Hydro publicly for abandoning their societal obligations, I expected of him to be critical as well, and asked him about that. "No, no", he said: "I have only positive things to say about Hydro. A formidable company, the

management handled the process exemplary. We got the money we asked for and are only very happy." With the money they got from Hydro they established an investment fund, and are now attracting high-tech investments and companies. "Our only problem is to get enough people. We are short on labor in Høyanger."

In Årdal as well, the process seems to have been handled exemplary, and unemployment never became a problem. This side of the story, however, didn't make it to the headlines, and no politician capitalized on it. No less they tried. As Eivind Reiten, the President and CEO of Hydro, later explained: "The very same politicians that were flocking to Årdal and Høyanger to pander to electors, getting their pictures in the newspapers while criticizing Hydro, they came to me later and asked us to give them a podium to praise how we handled the process. It is very tempting sometimes to talk out loud on these issues. However, it would not be very constructive."[2]

Cultural analysis of corporate and capitalist organization

The present thesis provides a cultural analysis of contemporary forms of capitalism at the millennial moment of the alleged total triumph of liberal capitalism. This ambition and overall scope of the project emerged during the research process. From an investigation of certain aspects and puzzles of knowledge sharing and experience dissemination related to managing practices in a set of industrial investment projects in Hydro, I came to realize that treating this subject thoroughly and in an anthropologically interesting fashion a more comprehensive approach was both appropriate and possible. These practices provided a particularistic starting point, an empirical and interpretative springboard, as it were, with which a broader and deeper, and not the least a more wholistic account of key cultural dimensions of contemporary forms of capitalism could be portrayed.[3]

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[2] Fieldwork interview, May 9, 2007.
[3] For an extended summary of the thesis see Appendix III.

I embarked upon this anthropological adventure from the ethnographical particularities of *managing practices* in a set of new *investment projects* in Hydro. The guiding research focus has been to investigate managing practices (as exemplary of knowledge work), particularly related to investment projects (and subsequently realized production plants), which are conducted and are operating in various forms across different cultural boundaries (national, organizational, epistemic) to identify characteristics of these practices and the projects within which they occur.[4] This is done to be able to more generally give a close-up view of industrial corporate endevours in a "globalized" economy, and analyze holistically aspects of economic and cultural development of late-modern society.

The ethnographic material has been generated in a mode of explorative discovering, investigating its expanding relational entanglements, leading finally to the present anthropological portrait of contemporary capitalist conjunctures. It is a cultural analysis focusing on a set of key dimensions, all derived from what I have found to be *core* managing practices in the Hydro projects. In addition to the transnational or global flavour of these projects, in a few key words arguably their most obvious defining traits are that they are highly *intensive* along three main dimensions, each designated with a key investiagtive concept: money,[5] knowledge and technology.

The study "aims for the jugular", so to speak, and thus seeks to describe and disclose as thoroughly as possible the central issues and aspects that pertain to managing these investment projects: what these managers are doing and are trying to achieve professionally, what it means both more broadly and deeply, and outline some

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[4] Most prominently the national boundaries crossed are related to the "Norwegian" heritage and top managerial and ownership control of Hydro in both projects, the Hydro organization at large, in relation to Hydro and the world seen as "globalized". Organizational boundaries refer mostly to internal divisions, sub-units and organizations within Hydro, while epistemic boundary relates mostly to the "engineer versus economist" relation.

[5] Or "money capital" using Marx terminology. Conceptions of "money" and "capital" may lead to various forms of confusion. In common usage among the people in this study, the two terms are frequently interchanged. When they use the term "capital" in other meanings than "money capital", usually another term is put in front of it, like "human capital" or "social capital". Referring to phenomena included in "productive capital" in Marx terminology, they use concepts like "technology", "competence", "human resources", and "knowledge".

of the main constraints and implications of the activities. That they are highly knowledge intensive both in terms of what we may label research-based and practice-based knowledge, and also with respect to money capital and related to technology is uncontroversial. What these combined intensities constitutes, are constrained by, mean and implies, as they unfold in real life in complex and multi-level ways, is the goal of investigation in the present work.

Thus these "intensities" also constitute important analytical and organizational dimensions of the thesis. While chapter one and two explicitly outline key issues related to the concepts of *knowledge* and managing (managing as knowledge work *par excellence*), it further runs like a theme throughout the entire text; Part II revolves to a large extent around investigations of concepts and enactments of *technology*; and Part III targets directly the realms of *economy*, money capital and finance. In addition to these core concepts, Part IV explicitly assemble additional material and analyses aspects of *signification* relevant to the focus of the study; in one sense Hydro's explicit efforts in the "managing of meaning", their rhetorical strategies and thus their "technologies of enchantment" (cf. Gell 1988).

Exploring a domain of formal corporate organization so critically defined by knowledge, technology and money, we are immediately projected into the conceptual space of *instrumental rationality*. As anthropology often is seen as "traditionally" being engaged in exploring forms of rationality in non-Western and small-scale societies, associated with "pre-modernity", here the focus is on forms of rationality in the midst of "modern capitalism" itself. I concur with Wilk and Cliggett that rationality should be the subject, not the assumption, of economic rationality (2007: 194), wherever it is studied. Similarly, seeing with Heidegger technology as a form of human instrumental activity, the subject rather than the assumption of instrumentality leads the investigation to question the more or less taken for granted assumptions of these forms of rationality. One of the arguments unfolded in the present thesis is that the forms of rationality also at "the center" of modern capitalism must be qualitiatively differentiated, and is

constituted rather by what I call “mixed regimes of rationality” than of one homogeneous and hegemonic form that in turn is colonizing all others.

The study is finally a cultural analysis in the sense that it recurrently discusses key distinctions and differentiations as well as unifying relations between Culture and Nature. In the orthodox view Culture, not the least through what we conceptualize as “technology”, aims at the “mastery” or “interpretation” of nature (Wagner 1981: 67). As discussed below, issues of rationality and human nature is in the forefront of various perspectives and debates in economic anthropology. The culture/nature relationship is a continuing reflexive, sometimes tacit and sometimes explicit, discussion throughout the entire thesis. While questioning “technology”, “economy” and “signification” the culture/nature constitution will be enacted and conceptions of rationality itself challenged. As Nietszche taught us, the massive breakdown of the traditional categories of rationality was baptized in the name of Dionysus. In the empirical material at hand we find unsuspected dialectics and understandings of the workings of rationality, metaphorically idealized by the struggle of Dionysus and Appollo. Madness and reason have some surprising twists in the present capitalist predicament.

A core tenet of the present study is the notion that the endurance, or persistence, of the capitalist corporative form is only apparent, and cannot be taken for granted. Like any other enduring patterns of social relations they have to be continually created, that is, reproduced. And once the question of reproduction is posed one needs to *go beyond* the organizational boundary and examine the wider interrelationships that guarantee its reproduction (cf. Burawoy 1979).

As mentioned, what I am at the first instance concerned with is managing in investment projects, that is, the managing practices involved, in a more or less direct way, in bringing about the emergence of new industrially based, technologically advanced production facilities. Moreover, what I have been particularly preoccupied with is the emergence, the bringing forth, of these facilities. That means particular attention is devoted to the *early phases* of the projects, and the early phases of the materialized plants. The focal point of early phases further implies a focus on concept

work, idea work, of design and integration work, of the social formation of ideas and abstract instruments. These early aspects of project work are described in Hydro project language as "value creation". The later phase of "executing" projects, that is, building the physical plant itself, is called "value control". Thus I am particularly interested in describing and revealing the practices and conceptualizations that constitute the notion of "*value creation*".

The bringing forth of projects is a fragile process of great complexity and depth, contingent upon a multitude of cultural dimensions, and which may be further enabled or may break down at various junctions of the process. It may also be brought forth unsuccessfully, that is, it becomes and materially instantiates a production facility, but it does not live up to the ideals of its "creators", and thus fails to embody its purpose(s). I find that these purposes are embedded in societal functions and are morally legitimized in much broader terms than "business as ususal" or "pure profit making". Through the "native concept" of "value creation", related practices and appropriate theories I am thus also at a further remove trying to unravel and describe some of the key practices and conceptualizations that pertains to what I will argue is the reproduction of relations of societal *wealth creation*, and by implication *relations of inequality*, under capitalism as a contemporary "world system".[6]

The primary guiding research questions have thus been: what are these managing practices in investment projects? What do they make and what do they signify? What do they produce, how are they constrained, and arguably even more significantly, what do they reproduce? At the first instance, the people and the enactments involved in projects produce ideas, concepts, communicative interactions, designs, drawings, contracts. These are again abstract anticipations of techno-economically advanced capitalist industrial production plants. Thus they are also anticipations of producing profits. And as will be conveyed, these projects provide

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[6] As such the study also touches upon the field of "anthropology of development and globalization" (cf. Edelman and Haugerud 2005).

particular circumstances in which a political and moral universe is reproduced. Projects are thus vehicles for the reproduction of relations on several interconnected levels:

1. Projects as vehicles for the reproduction of relations that produce new projects.
2. Projects as vehicles for the reproduction of the particular corporate organizational form (projects are one of the main devices through which corporations are sustained and grow, that is, the way it secures its continuing existence).
3. Projects as reproduction of the capitalist corporation as vehicle for the reproduction of capitalist economic and social relations.

Finally, the thesis find in the projects investigated an alternative trajectory to the presently *dominating* ethos of a contemporary "financialized" capitalist economy, and thus see:

4. Projects as the reproduction of another and partly alternative variant of capitalist relations of (cultural) reproduction.

Production capital and finance capital

Studying the investment projects for establishing new production facilities around the world thus provided my study with some key dimensions attractive to my interests: It had a *local-global* dynamic to it, it involved many forms of *leadership*, *management, expertise,* and *knowledge intensive* types of work, and it captured one of the major trajectories of *expansion* characteristic of capitalist corporations. As the study unfolded I increasingly came to realize that the empirical material allowed for a study of some of the dynamics that constitute the core mechanisms of contemporary capitalist social organization in the contemporary. I soon acknowledged that the three most pronounced characteristics of the Hydro investment projects, the combination of their money capital, technology and knowledge intensiveness, is also at the core of the dynamics of capitalism's own genesis and reproduction. From the vantage point of investigating a cluster of such investment projects, much of the whole complex of capitalist relations came into view. It provided a strong impetus to study in real-time the transhistorical, but

changing, interrelationship between the sphere of production, in particular industrial production in my case, and the flow of money.

A common distinction in theories of capitalism is that between "production capital" and "finance capital". In historically changing configurations, these main forms of capitalist activities have interacted both symbiotically or parasitically (cf. Reinert and Daastøl 1998). Following Perez (2002) the purpose of finance capital is to make money from money and thus to serve as agents for reallocating and *redistributing wealth*. By contrast, the term "production capital", again following Perez, "… embodies the motives and behaviors of those agents who generate *new* wealth by producing goods or performing services…" (op. cit.: 71, italics in original).

As for example Hart (2000) reports, writers from Aristotle to Polanyi have identified two distinct orientations to the market. Marx called the first one the "simple commodity circuit" (CMC), were commodities are sold for money to buy what one wants This conception developed into variants of merchant trading. The second one he called the "capitalist commodity circuit", which starts with money and has the aim of realizing more money, expressed in the general formula for capital MCM′ (where M′ is surplus value or profit). Simplifying vastly more complex issues, we might distinguish in Marxian terminology between two broad types of MCM′, and call the first the "finance capital" variant (MM′), and the second the productive capital variant (MCM′), although both are derived from the latter.[7] The distinct *industrial* capital element of the

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[7] Of what is here lumped together as "finance" (MM′) variants, we might note that Marx distinguished between two broad types; "trade capital" (again comprising "commodity trade capital" and "money trade capital") and "interest bearing capital". It would possibly be fruitful to ouline a more rigid scheme describing the various pre- and non-capitalist and capitalist commodity and money circuits based on the M and C letters. The following proposition is made by Stein E. Johansen (personal communication), were the A's designates pre- or non-capitalist forms of production and exchange, and the B's capitalist commodity circuits:

A1 CMC "Simple commodity circuit"
A2 MCM "Simple money circuit" (simple merchant commodity trade)
MM(m) "Simple direct money circuit"(simple merchant money trade)
A3 MM(r) "Simple conflated money circuit" (simple rent from credit).
B MCM' "Universal capital circuit"
B1 MCM'(p) "Complex primary money circuit" (capital production)
B2 MCM'(c) "Complex secondary money circuit" (merchant commodity capital trade)

capitalist commodity circuit were according to Marx not so much the mechanization and the factories as the penetration of money capital into production.

As will be described, the continuity and changing relations that constitute these historical dynamics of capitalist relationships are highly relevant to the present study. In the contemporary economic flows, finance capital has the upper hand in these relationships, and Hydro has since the millennium, although still employing the industrial capitalist formula of MCM′, been strongly influenced by the global "wave of financialization". However, simultaneously it is offering a form of resistance to the overall "financialization" trend in the global economy (cf. Duménil and Lévy 2004; Epstein 2005).

The ambition in the present work is thus to go beyond organization theory and reestablish concrete, particular, historical action, context and circumstance. If successful we are enabled to question and possibly shatter the appearance of naturalness or inevitability in the present order of things both in terms of the corporate form and in the present globally integrated capitalist social and economic "system". In this sense it is possible to argue that the investment projects in Hydro that are under investigation, arguably represent a concrete "totality", or assemblage, of advanced capitalism(s) itself.

On a further remove the present thesis is an effort to provide an in-depth description and analysis of some of the central contemporary capitalist practices of producing societal wealth and affluence. A basic premise of this I find in the adoption of the general Schumpeterian and Chandlerian notion that the large non-financial corporations, operating in oligopolistic markets, have been the main source of capital investment, technological change and productivity growth for most of the twentieth century in the capitalist economies, at least in the US (cf. Crotty 2005: 78). In this perspective my case could prove exemplary, as the focal point of empirical investigation is the creation and realization of advanced industrial investment projects, as they are

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MM'(m) "Complex direct money circuit" (merchant money capital trade)
B3 MM'(r) "Complex conflated money circuit" (capital rent from credit)

ambiguously situated at the contemporary crossroads of industrial and financial capitalism in a globalized economic world. As such capitalism(s) is sought anthropologically analyzed not from the periphery, but from actions and activities at the center(s). However, analyzing the creation of wealth is, by implication, as it were, also a study of the reproduction of relations of economic inequality. As the present condition of capitalism testifies, the study at hand may shed some illuminating light on the institutionalization of asymmetrical relations of inequality in contemporary capitalist social relations.

The analysis of these processes is comprehensive in the sense that they seek to understand the phenomena on several interconnected levels of analysis, reflecting the differentially constituted "reality status" of the phenomena. Rather than framing it as a problem that the analysis cuts across different levels (micro, meso, macro), it is put forth as a strength of the anthropological approach. By following the "object", the flows of people, knowledge and money through managing in investment projects, the various levels are not seen as ontologically distinct entities but as "assembled" dimensions along which the social field is unfolded. The study thus seeks to disclose economic and ideological, epistemological and ontological aspects of the emergent movement of these investment projects.

The present study cannot therefore, easily be categorized within any of the common sub-labels within which anthropological or social science research in these realms could be categorized. It rather bears affinity to what Czarniawska has labeled "creole researchers, hybrid disciplines and pidgin writing" (2007). It is as such a transdisciplinary effort. Edelman and Haugerud complain about the fragmented discourses in anthropology of modernity, development and globalization, where "… culture is on proud display while historical political economy and economic and financial globalization is largely absent" (2005: 1). The present thesis is in this light one small effort in trying to remedy this situation. In doing so it necessarily also tries to answer their call as to: "Rather than encourage continued separations of these analytical

tracks, we need new intellectual hybrids: adventurous combinations of culture, economy, discourse, power, institutions and history" (ibid.).

With anthropology's historical legacy in its "respect for the existing" (cf. Sørhaug 2005: 19, *my trans.*), of "actually occurring realities", as constituted through a web of "reflexive relationality" that is not demarcated by any disciplinary boundaries, anthropology might itself be seen as a transdisciplinary discipline. Indeed, it may offer an arena for a dialogical and reflexive "new unity of science", like proposed for example by anthropologist Reidar Grønhaug (2001). This new unity, however, should avoid the "conflations of much so-called post-modern science", notes Grønhaug, and rather both honor phenomenological diversity, while unifying difference with differentiated connections and synergies. In a somewhat similar vein Brian Morris argues notes that "… anthropology surely needs to go beyond the tired dichotomy of textualism… versus positivism (phenomenalism) and embrace a truly materialist ontology, a critical realist perspective, and a dialectical (relational) epistemology (2007: 28). This would according to Morris enable a continuation of what Maurice Bloch described as the 'dual heritage' of anthropology, "… combining interpretative understanding and social science" (ibid.).

Indeed, the present work is not constrained by the social sciences, but is informed by the natural sciences and the arts and humanities alike. Grønhaug (ibid.) argues that anthropology must reinvent the dialogue between the humanities and the natural sciences that was vitally alive before a codified demarcation between them was firmly established in the latter part of the nineteenth century. Grønhaug proposes to reach back to Weber's insistence of combining "meaning" and explanation, that is, of adjoining the hermeneutical and phenomenological interpretative with causative explaining sociology. As a reply to the critique posed in the C. P. Snow's book "The two cultures" (1961), one trend of the millennium is, not the least through the sciences of "complexity" (cf. Waldrop 1992; Juarrero 1999; Stacey 2001), an emerging "third culture"; a concept advocated for example through a series of conversational interviews

with leading scientists, for a new dialogue between the sciences that "go beyond" the scientific revolution (Brockman 1996).

Likewise, the present description utilizes a varied template of narrative writing styles. All three of Van Maanen's (1988) outline of types of ethnographic "tales"; the *realist*, the *confessional* and the *impressionist* tale are used, in addition to a set of narrative and "performative" presentation tropes and techniques (see chapter four for a discussion). Although economic anthropology, organizational anthropology, industrial anthropology (or sociology), business anthropology, "global anthropology", or organization and management studies, all are designations that are relevant here, and literature from all these streams are indeed utilized, the following study has ambitions to transcend or go beyond such demarcating categories. If a sub-discipline of anthropology absolutely needs to be identified as a guiding theoretical body of thought in the present study, it must be *economic anthroplogy*, and as explained below *especially political and cultural economics*. An overview of some of the most relevant streams of research literature is given in chapter one and two.

The "global" corporation and its corollaries

The current phase of the cultural history of capitalism seems to provide particularly favorable conditions for a study like this. At least if you are interested in the ambiguities and dilemmas, the creations and destructions of capitalism, the multiplicities and complexities of capitalism(s) turned planetarian. One of the primary characteristics of contemporary capitalist societies is the thriving development and excess multiplication of organizations. The "modern world" is "a society of organizations", a characterizing trait described by such differently distinct scholars as the famous Chinese anthropologist Fei Xiatong (1992), trained by Malinowski and the Russian anthropologist Shirokogorof, and by management guru Peter Drucker. Although organizations come in many different flavors, in terms of political economy one form stick out like the proverbial sore thumb. The corporation.

Among the 100 largest economic actors on the global stage in 2004, compared in terms of value of the GDP and sales, 72 were companies and only 28 were countries (cf. Clegg et al. 2005: 457). The world is home to more than 60 000 "transnational" companies, most of them however, with origins in just a few developed countries. In a world in which the processes of "globalization" so far have produced global economic systems and cultural exchanges on global scale, while politics still is largely national and regional, these companies pose an immense power container and source of global forms of authority. Indeed a "transnational solution" to the situation of managing across borders is proposed (Bartlett and Ghosal 1989). In this vein I agree with Burawoy and will try to avoid the effect that: "With the subsumation of industrial sociology under organization theory, the distinctiveness of the profit-seeking capitalist enterprise is lost" (1979: 5).

These corporations are simultaneously glorified as the beacons of modernization and the civilization project, and concomitantly demonized as the major force behind the destruction of our planet in ecological, social and moral senses. For example are transnational corporations "held accountable for the imminent demise of the nation-state" (Comaroff and Comaroff 2000: 319), and the corollaries thus implied. Good and evil in ample supply are projected onto the image of these mega-organizations. This moral doubleness is to the point illustrated on the front cover of Bakan's book "The Corporation" (2004). In a red colour outline which signifies power, the classical businessman in a suit with a briefcase is drawn on a white background and supplemented by affording him both the devil's pointed tale and a holy halo above his business hat. The corporations are symbols of both human cultural success and failure, of creation and destruction, of progress and degeneration, and of splendor and ugliness. They are branded icons of our own projected good and bad selves.

"Global capitalism" is a gigantic moral battleground with the transnational corporations, the grassroots movements, the politics of state capitalism, and international affairs and civil organizations as the major actors. The corporations are both a sign and a metaphor for the antinomies, captured in a concrete jurisprudential but

nevertheless elusive form, of the celebrated and protested against "global condition" of "late" or "reflexive" modernity. In short, they are a fundamental focal point from which the moral universe of man in most of his images, from social and economic man, to *homo faber* (man the maker) and *homo ludens* (the playing man), may be unfolded through all its magnificent and depraved manifestations.

During the unfolding of my research process, increasingly I came to realize that Hydro Aluminium[8] proved to be an exemplary corporate context for illuminating some of the most basic ambiguities, asymmetries and complexities of the developmental processes and contemporary predicament of economic globalization. Hydro Aluminium illustrates a vast range of the tensions and paradoxes of the world economic canvas: the complex transformations of the industrial society into the so-called "knowledge society", because Hydro is viewed both as a "traditionally industrial" and a "knowledge firm", with a leg in both the so-called "old" and "new" economy; Hydro manifests the tensions between the national and the supranational, because it is both a flagship national company of Norway, and at the same time a multinational or "global" company with presence in more than 30 countries; furthermore Hydro may educationally illustrate some of the basic mechanisms by which asymmetries and inequalities of contemporary economic life on the global scale came about and are reproduced and expanded. Like the massive circulation and accumulation of money worldwide is in fact concentrated mainly between a few rich countries, so are Hydro's large bulk of activities.

In the wake of the establishment of the modern Norwegian state by the end of the 19th century, Hydro was conceived and quickly developed the role as the locomotive for the Norwegian industrialization process, and subsequently the welfare state. Hydro has arguably been the single most important industrial company in Norwegian history, and possibly still is. And quite contrary to the economic structures and processes that

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[8] During my fieldwork period Hydro divested two of its three main business divisions. The fertilizer business became the Agri corporation, and its oil and energy division merged with Statoil to form StatoilHydro. Hydro continued in 2007 as a dedicated Aluminium company. Throughout my research I have been solely working with the Aluminium division.

enabled the transformation of Norway out of poverty, today Hydro needs to play by the rules prescribed by the hegemony of a financialized economic order, ideologically legitimated by neoliberalism or neoliberalization (see Part II for a discussion). This climate is upheld by what "pro-globalizer" Bahgwati (2004) has labeled the "Wall Street-Treasury complex", including the Washington institutions of the IMF and the World Bank. Whatever complex processes "globalization" is a short-hand designation for, what is historically remarkable in the contemporary, as Edelman and Haugerud notes: "… is the celebration of a particular form of globalization – economic neoliberalism" (2005: 23). The neoliberalized playbook has over the last 30 years or so accelerated the devastating global economic inequalities (see chapter eight).

Hydro, also in its capacity as being partly state-owned, is a formidable exploratory example and thinking device in eschewing the complex and historically changing relationships between the state and inter-state system on the one hand and the market economy on the other, which in various configurations has constituted the different forms of capitalisms that so profoundly forms the contemporary globalized world order. Although being partly state owned Hydro might be seen to exemplify the bourgeois society (economy), as demarcated both towards the family and the private sphere on the one hand, and the democratic state (politics) in Hegel's trilateral differentiation.

Hydro's status in the contemporary capitalist mode of production is certainly ambiguous. Not only because the Norwegian state owns 43.82 percent of the company (2007), but also its uneasy positioning in a cultural and economic matrix increasingly defined by finance and consumerism. As will be discussed at length (Part III), Hydro's "production capitalism" is increasingly defined on terms set by a "financialized" economic order, and cannot either feel ultimately at home in the stereotypical idioms of "consumer culture" (cf. Miller 1997; Douglas and Isherwood 1996). As noted by Comaroff and Comaroff: "As consumption became the moving spirit of the late

twentieth century, so there was a concomitant eclipse of production; an eclipse, at least, of its *perceived* salience for the wealth of nations" (2005: 178).[9]

The present analysis thus focuses upon the "predicament of production" in this climate, and as Reinert notes: "It is in the sphere of production that the best arguments both against and for globalization is to be found" (2004: 75, *my trans*.). Hydro still keeps the "banner of production" high, in the midst of an economic and cultural context of consumer and finance pressures and expansions, and their investment projects epitomizes their ambiguous positioning at the crossroads of production and finance capitalism.

Managing projects as "global assemblages"

In the continuation of two of the most important "ideal types" of capitalism(s), "production" and "finance" capitalism, Hydro further illustrates the struggle between two fundamentally different corpuses of economic theories; exchange theories ("the standard theory") and knowledge- and production-based theories ("the other canon") (cf. Reinert 2007; Appendix I). These two idealized theoretical trajectories reflect different worldviews that has governed economic policies and practices of capitalism and globalization since the emergence of capitalism and the inter-state system in the 15th-16th centuries. By studying extensively the management of projects to establish new factories as cross-cultural "global assemblages", I have been studying the basic processes that has enabled modern capitalism to flourish and made some states rich and wealthy.

Today, as Holmes and Marcus notes (2005), when the political economy of the nation-state is effaced by transnational forces, the overarching interpretive challenge for the ethnographer is to gain access to the practices of expert subjects, through which their knowledge work, society and economy are re-created, and new formations of

[9] For an ethnographic effort of analysing contemporary capitalism from the consumption angle, see for example Miller (1997).

political economy emerges. Moreover, as Edelman and Haugerud notes: “The seismic economic and political changes associated with neoliberal globalization coincided with anthropology’s turn away from macro-narratives, grand theory, and realist ethnography” (2005: 17). By studying the processes of bringing forth “projects for industrial production” (for realization in Norway, Spain, China, and Qatar) ethnographically, I believe to provide both a somewhat detailed picture of, and an outline of critical differentials in the workings of capitalism in its contemporary neoliberal finanzialiced moment of the renewed era of globalization since the 1970s.

Like Hannerz notes, anthropologists should be “wary of terms which come into fashion and where the border between analytical scrutiny and political cliché threatens to become blurred” (2007: 2). He continues, however, to conclude in the same vein as I have come to realize: “Yet it seems undeniable that in the last couple of decades or so we have seen the emergence of a major, more or less worldwide set of ideas and practices which I would describe as a neo-liberal culture complex” (ibid.). The recurring buzzwords characterizing this culture complex are according to Hannerz *accountability*, *transparency*, *privatization*, *quality control*, *branding*, *auditing*, *excellence*, and *ranking*. As will be illustrated and exemplified throughout the following text, this worldwide culture-complex is a most relevant contextually enactive background to the empirical investigation conveyed by the present thesis. Moreover, the culture-complex is felt in everyday-lives throughout the world. The field sites and “fieldflows” that I have investigated have thus provided the possibility for an analysis of some of the processes at the core of the emergence of contemporary forms of the more or less worldwide neoliberal capitalist culture complex.

This possibility arose because the types of projects under investigation are characterized by a particular “global quality”, in the sense specified by Collier and Ong describing the term “global assemblages”: “They are abstractable, mobile, and dynamic, moving across and reconstituting “society”, “culture”, and “economy”…” (2005: 4). These projects embody a specific global form in the contemporary, and as such they can be described as instantiating a particular form of node, or abstracted materialization, in

the flows of the global. Framed through the recently popular concept of *assemblages* (cf. Marcus and Saka 2006), my ethnographically investigated projects can also be described thus: "As global forms are articulated in specific situations – or territorialized in *assemblages* – they define new material, collective, and discursive relationships" (Collier and Ong, op. cit.: 4). In recent cultural analysis "assemblage" has provided a "structure-like" anti-structural surrogate concept enabling researchers to "… speak of emergence, heterogeneity, the decentered and the ephemeral in nonetheless ordered social life" (Marcus and Saka, op. cit.: 101). Following Latour (2005), the "sociality" in these relationships are not seen as some sort of essential quality that can be discovered or measured, but rather mean something connected or "assembled". Likewise, in his moves to trace the social, the first move consists in "localizing the global", in the sense of realizing that there is no "global" but a chain of connected localities: "No place can be said to be bigger than any other place, but some can be said to benefit from far safer connections with many more places than others" (ibid.: 176). The second move in tracing the social is to recognize that the local is never confined to one place, and thus to redistribute the local, in a sense to "globalize the local". The third move then becomes to recognize that what seems to be both global and local consists of and are the products of many connected times and places.

The question that remains is what reproduces and changes the stability of the connections, what lifts the social into hierarchies, above the "flatland". Some of the answers to these questions come into particular view in a study in a formal, corporate context; the processes of standardization, formalization and classification. Adhering to the argument of Collier and Ong, my empirical investment projects forms of "global assemblages", are thus sites for the "… formation and reformation of what we will call… *anthropological problems.* They are domains in which the forms and values of individual and collective existence are problematized or at stake, in the sense that they are subject to technological, political, and ethical reflection and intervention" (2005: 4). Thus, these investment projects for industrial production, brought forth by Hydro as both localizing the global, and globalizing the local, "all over the world", is in this

thesis framed as a form of global assemblages that poses anthropological problems for investigation. And the tensions inherent in the concept of "global assemblages" should be emphasized because it is key also for my concern with investment projects on "the global scale": "… global implies broadly encompassing, seamless, and mobile; assemblage implies heterogeneous, contingent, unstable, partial, and situated" (ibid.: 12).

Moreover, Hydro Aluminium is an integrated light metals company. That is, they cover the entire value chain in the light metals industry, from upstream alumina mining at the one end, via a variety of mid-stream products for industrial and construction use, to providing key parts in consumer goods at the other (downstream) end. This is interesting because Hydro businesses thus cover the range from what is now commonly categorized as highly "resource-based" economic activities to highly "knowledge-based" activities. To the latter category may the advanced services Hydro delivers also be included.

This situation offers a possibility in studying how qualitatively different economic activities are constituted under radically different constraints and premises, and produces a variety of diverse effects. For example the economic "laws" of diminishing versus *increasing returns* (cf. Arthur 1994), as inherent to qualitatively different types of economic activities, have impact on for example economic inequality and wealth generation and asymmetric accumulation and distribution. Hydro Aluminiums activities are exemplary "increasing returns" economic activities, considered to be situated both in the process industry and in manufacturing. Their activities have created and absorbed both new knowledge and new technologies (both innovations and inventions) and huge amounts of productive capital investments for over a century, something that testifies to the activities huge potential in wealth creation.

Contextualizing the study within Hydro

A major empirical aspect linking the "micro flows" in investment projects to the larger body of the Hydro corporation is a significant observation made by Lie in one of the volumes to the "history of Hydro" (2005). Historically from the 1970s through the 1990s Hydro could not be characterized adequately as an "operational culture" – in the sense of a continuous focus on the daily operations and consecutive control of economic performance in each business unit. Rather to the contrary. Several of the chapters in the "history of Hydro" emphasize the company's capacity "… to carry out really big, complex investment projects as one of its foremost qualities" (ibid.: 434, *my trans*.).[10]

My own empirical material supports this contention. The comprehensively written history of the company thus testifies that a key defining characteristic of the corporation has been in the widest possible sense its "project-oriented organization" (ibid.: 435). Taking this observation seriously leaves the present study, with its focus on "investment project flows" in Hydro to study the arguably core practices which have been constituting categories of company "identity" and other cultural formations, at least in the recent decades.

My intimate relationship with Hydro commenced with a collaborative research project in 2001. I had just a year earlier received my master degree[11] in social anthropology, and began working as a researcher in the research foundation Sintef. The first Sintef project collaboration with Hydro, as well as the subsequent ones, was exploratory in design, but revolving around the simple, yet subtle and intriguing fact that one investment project may be accomplished successfully, while the next can fail, and so on and so forth (see chapter three for an outline of these research projects). While Hydro has a well-known reputation as a company with strong project expertise, and a solid historical track record, also here smaller and larger failures occurs. And

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[10] "The history of Hydro" comprises three volumes, see Lie (2005), Andersen (2005) and Johannessen Rønning and Sandvik (2005).

[11] The degree was labelled "Hovedfag" at the universities of Norway at the time, and comprised in addition to course teachings and a ten-hour written exam, a theoretical essay, half a year of ethnographic fieldwork and in my case the write-up of a 200 page dissertation. In total two and a half years of study.

although comprehensive systematics related to "project management"[12] is in place, history documents that there is nevertheless quite considerable amount of complexity and unpredictability left in project endeavors. Investment projects are an inherently complex affair, reflecting along several dimensions what Juarrero has labeled "complex dynamics of action" (1999).

To contextualize my own research in Hydro I want to give as briefly as possible a simplistic formal overview of Hydro as a corporation.[13] Hydro was formed in 1905 by the "holy trinity" of the *entrepreneurialism* of Sam Eyde, the *scientific genius* of Kristian Birkeland, and the *financial brilliance* and muscles of the Wallenberg family. It was established as a fertilizer production company, and moved later into magnesium, power, aluminium, oil and gas, and some smaller areas. In the recent decades their main organization has been in the three divisions agri, aluminium and oil and gas. By 2007 it had divested both its agri and oil and gas divisions, and moved forward as a dedicated company focusing on aluminium, the light metal that was worth more than gold in the mid nineteenth century and now branded by Hydro as the "metal for the future". Their magnesium activities were also sold or closed down by 2007. Interestingly magnesium has since the 1960s been the metal that was branded as the "metal for the future", and also "the sleeping beauty" (Andersen and Yttri 1997). Loosing faith in the beauty aluminium adopted the slogan.

Hydro is one of the few companies throughout the world at present with a continuous and viable hundred years history. It was the key "industrial locomotive" in the Norwegian modernization process. In 2007 some key figures of Hydro are the following: 25 000 employees of which only 7000 are located in Norway; operations in more than 30 countries; annual turnover above NOK 100 billion; operating income

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[12] There is by now a quite extensive academic literature on "project management". However, this tradition has evolved from "operations analysis", with overly positivistic emphasis on rationalistic control mechanisms and simplistic assumptions about complexity and communicative interaction in social networks. For a critical review see for example Cicmil and Hodgson (2006). As analytical or conceptual resources the relevance for my study is limited, and a literature review is not embarked upon here. To the extent necessary, this literature stream is invoked when brought forward by direct reference in the empirical material.

[13] All of it, and more, is available at www.hydro.com. Some of their own presentations are utilized here.

NOK 7.8 billion in 2006; and a market capitalization (stock exchange value) of NOK 99 billion (July 20, 2007).[14]

For understanding the impact and role of the large corporations, both domestically and internationally, Hydro's self-description as the worlds third largest "integrated aluminium company" provides a clue. In the evolutionary history of the corporation, it has been a development with increasing internal control over key processes to reduce risk. A central strategy has been to integrate the whole of the "value chain" within their formal boundaries. Hydro's current integration of main areas and products is presented in figure 1.

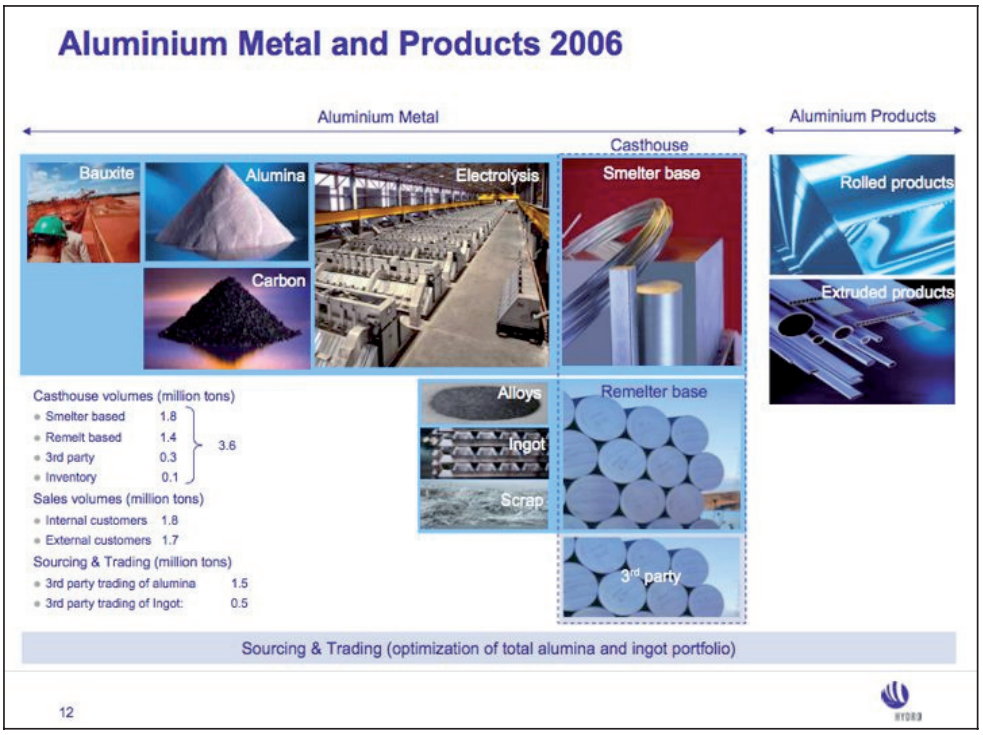

Figure 1. Hydro as "an integrated aluminium company". The complete value chain, with outline of main production activities and volumes in different segments (Source: Hydro "Investor Presentation", July 2007).

[14] Source: Hydro "Investor Presentation", July 2007.

Their business is highly knowledge and capital intensive, as well as competitive. As touched upon above, it is a common misperception to regard only "downstream" (in the value chain) types of activities as the only ones that are research and knowledge based. Both upstream, but not the least "midstream" activities in smelter and casthouse activities have been intensely research, and more broadly, knowledge driven. Dedicated research and development activities numbers approximately 500 people and annually $85 million within Hydro alone.[15] As documented by several academic publications, the midstream activities are indeed heavily research intensive (cf. Wulff 1992; Øye and Ryum 1997; Sand et al. 2005; Karlsen 2008).

Another of their own charts presents their overall position in the aluminium industry, both in comparison to other relevant process industry companies and manufacturing companies. Several of Hydro's downstream activities might be considered "manufacturing".

[15] Trygve B. Svendsen, Plant Manager Sunndal, Norway, Capital Markets Day Presentation, September 5, 2007.

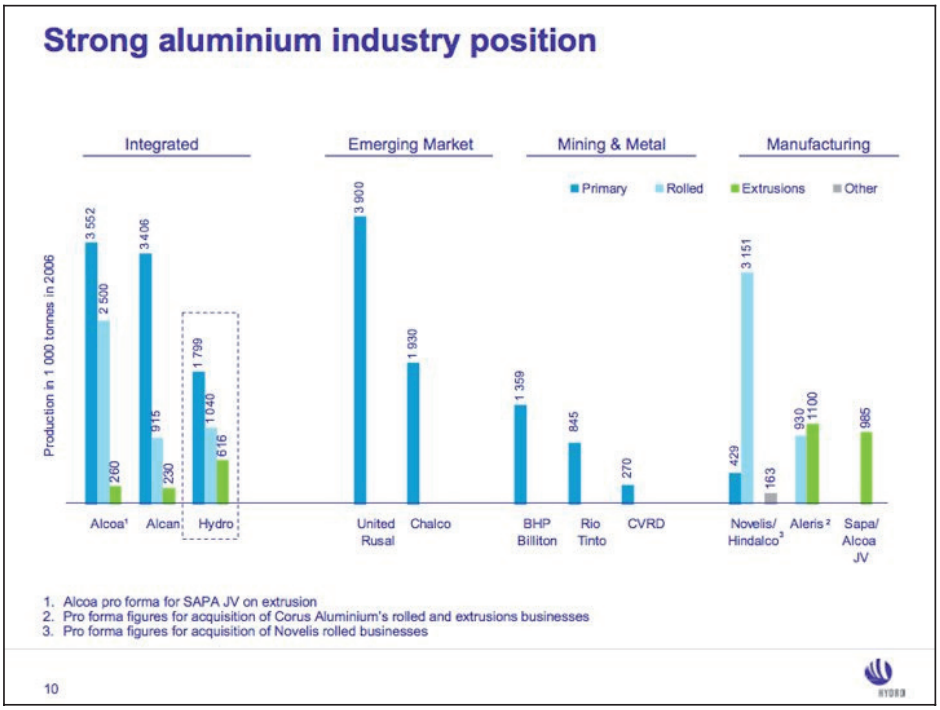

Figure 2. Hydro's relative market position in comparison with other aluminium companies along various relevant business dimensions (Source: Hydro "Investor Presentation, July, 2007).

As mentioned Hydro has a strong international presence (see table 1, and figures 3 and 4). Interestingly although a huge majority of production, sales and employees are located outside of Norway both top management and the income tax payment contribution is concentrated in Norway.

	Norway	Europe*	Other countries	
Employees**	7000	15000 non-norwegian		
Management***	81%	19 % non-norwegian		
Production				
Primary	1019	438	342	Thousand tons
Remelt	135	585	380	Thousand tons
Products	220	1530		Thousand tons
Total	1374	3275		Thousand tons
Sales****	18,138	134,964	43,132	Mill NOK
Income tax****	40,056	890	1155	Mill NOK

*Table 1. Distribution of Hydro actvities and characteristics. * Exclusive Norway; ** Per 31. Dec. 2006. Hydro Metal and Products; *** Pr. 31. Dec. 2006. Top 200 management of Hydro (oil and gas included); **** Numbers for Hydro (oil and gas included) (Source: Hydro Annual Report and Hydro members).*

An important additional factor is that among the top 200 managers in Hydro Aluminium only 16 percent were women in 2006. For both the top 50 and top 200 managers in the overall Hydro organization (oil and gas included), women representation was approximately 19 percent in 2006.[16] Managing in Hydro is to a large extent a "man's world" (see chapter ten).

Hydro has as noted above presence in over 30 countries worldwide. Their up and midstream metal production capacities are represented geographically in the following picture:

[16] See Hydro annual report 2006 (http://reports.hydro.com/en/investor_relations/financial_rep/annual_reports/2006/viability_performance/organization_working_environment.html).

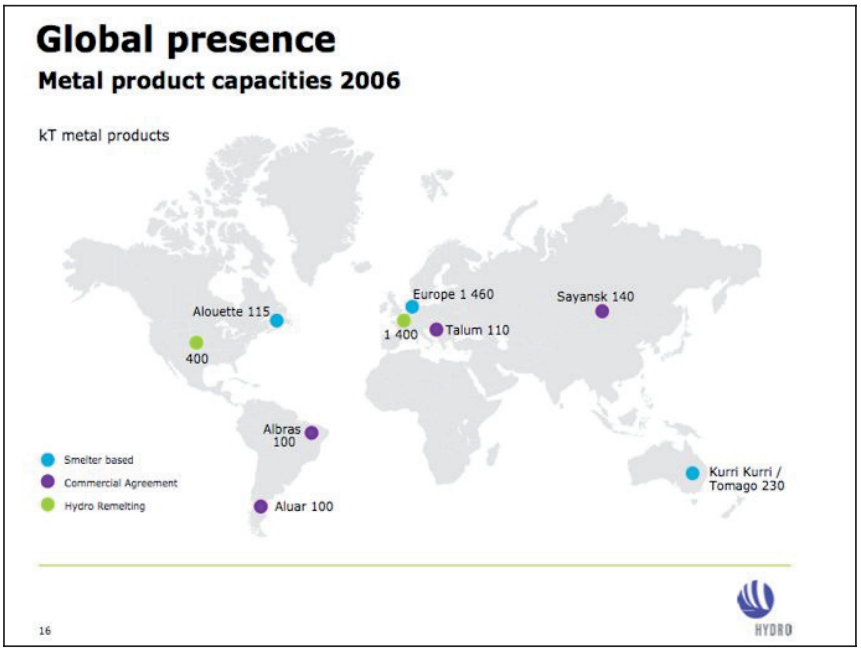

Figure 3. Metal product capacities throughout the world (Source: Hydro).

The presecene of their contemporary downstream operations are outlined geographically in the next figure:

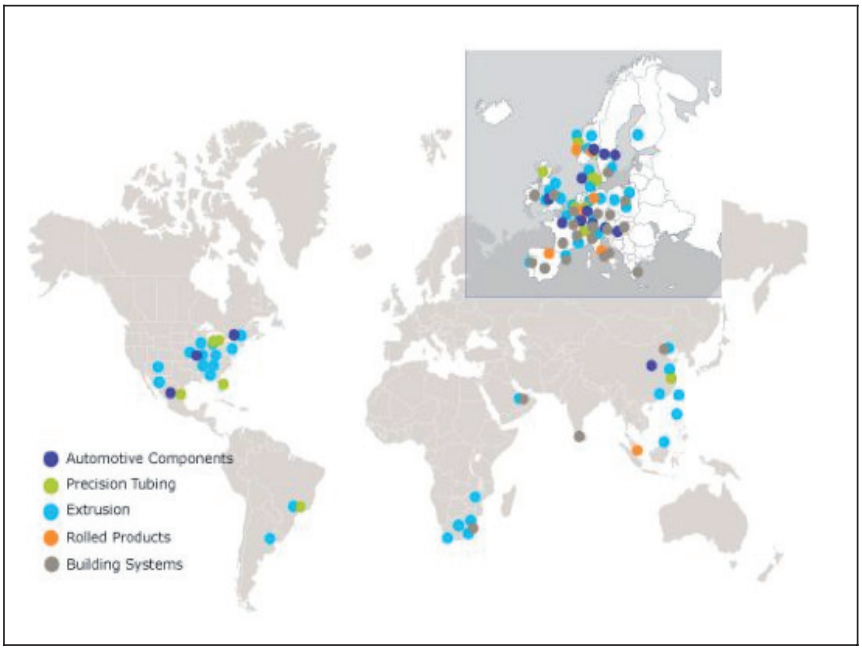

Figure 4. Geographical dispersion of their downstream production facilities throughout the world (Source: Hydro).

The projects I have been investigating in the present work have been international Hydro collaborative efforts with the aim of establishing production facilities in both midstream and downstream business, in Spain, China and Qatar (see chapter three for an overview). The global flavour of the projects are illustrated by the fact that the Qatar project team included more than 100 persons working from their "home base" in more than 10 different countries.

Organization of the thesis

From the research focus of investigating managing actions in relation to a set of Hydro Aluminium international investment projects, the problem complex (outlined in Part I of the thesis) is unfolded along three main analytical organizing pillars that each comprises one part of the thesis, indicated by a key investigative construct: "Technology" (Part II), "Economy" (Part III) and "Signification" (Part IV). The thesis advocates a wholistic

approach, and the main pillars are interconnected in numerous ways. Each pillar contains elements of the two others and they are as such mutually constituted, but each of three major aspect of the problem complex is elevated and highlighted in this analytical framing. As indicated above and further elaborated below, all three of the main "substantive" parts are inspired by both *political economy* and *cultural economics* perspectives, but coarsely speaking one might argue that while Part II draws heavily on both, Part III is more inspired by the former, and that Part IV draws more extensively on the latter. The research design is further elaborated in the last section of chapter two (see especially Figure 6 and Table 2).

In Part I the thesis work will be situated in relation to relevant academic streams and discussions in theory and method. In chapter one and two I position the work presented here within theoretical academic discourses relevant to the focus of the study. Seen as an anthropological issue, the research focus on *managing in international investment projects for industrial production in a capitalist non-financial corporation* has many literature streams "leading up to it". While few, if any, targets the subject matter directly the chapters give a brief overview of the (mainly) anthropological literature concerning some of the major academic debates and constitutive key conceptions of the research focus: *managing*, *modernity* and *economic rationality*; "*global industry*" in the so-called "*knowledge economy*", and not the least managing seen as *knowledge work*. Relevant issues in economic anthropology, as well as organizational and industrial anthropology are covered, and a brief discussion of the key concern on "*forms of rationality*" is given. The end of chapter two concludes with an overview of the research design and the analytical strategy chosen to enable an anthropological discovering process and investigation of the research focus.

In chapter three, "Troops, Tropes and Troubles", a reflexive "confessional tale" of methodological issues pertaining to doing ethnographic research and an anthropological study within a modern capitalist, dispersed industrial expert and managing elite context; in many ways the "ideal ethnographic field", as interpreted with a lense of "the received tradition", turned upside down. It is offered as an open ended

critical and self-critical reflection, using the fieldwork conducted as an opportunity for a broader critique of anthropology. It argues for a stricter separation between ethnography as ideographic description, and anthropology as a nomothetic science of generalizations; making the point of forming jointly an ethnographically enabled "philosophy outdoors". It seeks also for a reconceptualization of ethnography as a form of research-collaboration type of "para-ethnography", particularly fitting for these empirical domains, and advocates for an "abductive anthropology" as a science of discovery and wonder.

In chapter four, I give a full account of the *narrative aspects* of both the "para-ethnographic" collaborative research methodology and the "generalizing" anthropology reflected upon in chapter three. This chapter argues for an ethnography where "narrative knowledge" constitutes both a form of "gathering" or constructing empirical material, and as a form of conveying and communicating that may enable an engaging anthropology. Here an outline of how the communicative ethnographic data is analyzed and presented in the thesis is given. Developing the para-ethnographic approach this data is elevated as anecdotal or *narrative* knowledge, and one of several ways utilized in the present research project in terms of gathering, constructing and conveying narrative material, called "learning histories", is presented in a reflexive analysis of methodology. The learning histories approach represents only *partly* the overall narrative approach to ethnography as advocated here. Narrative ethnographic material is conveyed throughout the thesis in several other ways than as "learning histories", but a particular focus on the latter approach serves to illustrate points of general interest and reflection to ethnography more broadly speaking.

In Part II of the thesis, the point of departure is descriptions and analysis questioning "*technology*" in relation to managing projects. In chapter five, "Managing in the Middle Kingdom", the questioning of technology is addressed directly and the "instruments" used in interpreting and mastering both nature and culture is discussed. Employing ethnographic material especially from the three Hydro projects in China, cross-cultural issues in the managing of the projects, and thus the instrumentalization of

cultural relations, are highlighted. I analyze the understanding and disputes surrounding the role of "technology" in a wide definition of the term, including language-based instruments. The chapter explores the broader themes of cultural formations and flows, knowledge sharing and dissemination, and forms of authority and social organization. This is achieved through a specific focus on the complexities pertaining to the management of technology and especially technology 'transfers' and transformations interpreted broadly. Discussions about technology as instrumental human activity and complex causation are offered, and a conclusion about the need for new "differential ontology" is given. The intimate relationship between technology and art is highlighted, advocating a view of technologically advanced project engineering as a reinvention of the role of the artisan and of engineering as "industrial arts".

In chapter six, "Presencing Projects", some of the main themes from the foregoing chapter are continued. I outline some of the operators in what I call the *"social reality of construction"* – in the field of managing to bring forth industrial projects in Hydro. Here "technologies" of project *genesis* is in focus. Through descriptions of a corpus of empirical material highlighting the emergence of projects, the major projects that have been ethnographically investigated are analyzed in terms of epistemological and ontological questions. I identify core operators to be "process structuring", "concentration and projection" as well as "intersubjective intentionality". Through these phenomena the projects "coming into being", their balancing on the edge of oblivion, and their emergence to presence(ing), realization and robustness is understood in terms of fundamental processes related to enabling an ethos of collective creation and coherence to unfold.

In Part III, the point of departure for the investigation of managing in projects is questions related directly to finance and money, issues of *economy*. In chapter seven, "The Turn to Enchantment", the projects are exposed from the angle of financing and practices in the "economy" more in general. Based in the economic tradition of the "other canon", the chapter analyses the financial constraints within which the Hydro projects are embedded and partly constituted. The chapter analyses a set of practices

and cultural transformations of both project work and in the corporation more in general, that in sum signifies a strong "turn to finance" that has emerged since the millennium shift.

In chapter eight, "Wagging the Dog", the analysis from the previous chapter is continued. Here, the turn to finance in Hydro is further investigated, and the wider constraints constitutive to this shift are identified. Through this discussion a set of tensions are revealed that is generalized to the conditions of the integrated globalized capitalist economic system as a whole, as it is instantiated in the contemporary forms of "neoliberal financialization". The disjunction between the productive and the financial economy, ambiguously illustrated by the Hydro case, is analyzed in terms of notions such as enchantment, virtualism and "accumulation by dispossession". In Hydro a movement from "production" to "value creation" to "value appreciation" is identified. This movement is symptomatic of an overall "reenchantment" of the whole capitalist economic and social "world system" of relations, and signifies moreover a contemporary crisis of fundamental scope and depth. Illustrated by Hydro's ambiguous positioning in the contemporary global economy, the hegemony of the finance economy is now akin to the tail that is wagging the productive economy dog.

In Part IV of the thesis, although abundantly addressed also earlier in the thesis, inspired by discussions in "moral and cultural economics" here a more explicit focus is directed towards descriptions and analysis of signification, the representation or conveying of meaning. In chapter nine, "Incarnation Inc.", the focus is to target industrial "value creation" in projects, the key "native" idiom of the *early phase* in projects, through a more direct focus upon "corporate communication" and impression management. Working from the premise that a universal feature of leadership is its incarnation of some form of organizational processes, I specifically analyze the forms of incarnations that manifest themselves in the context of projects and Hydro as a production oriented capitalist enterprise in the "age of financialized neoliberalism". Here I approach the theme of industrial "value creation" from the side of representation and symbolism. As an immanent part of the "turn to enchantment" that has

accompanied the neoliberalization of the globalized economy in its current phase, phenomena like signs, identity, and personality and so on and so forth, seem to have moved to the center stage of capitalist economic activities. Here I discuss the basis of Hydro's substantial efforts of *language-based* symbolical representations and idioms of their corporate values, "id-entity", position and status. Apart from the significant "turn to finance" analysed earlier, I find that they try to carve out a viable position linking quite coherently their "rhetoric and realizations", while being caught in a complex "crossfire" largely not defined by themselves. I conclude that Hydro so far to a considerable extent has succeeded in that effort.

In chapter ten, "Material Metaphors of Managing", an investigation of the signifying aspects of a set of key *non-language* idioms is performed. Complementing the analysis of what Hydro "stands for" more explicitly in the foregoing chapter, here follows a discussion of non-language, physical but nevertheless expressive "material metaphors" of the professional work life in Hydro projects and more in general in the corporation. Here I interrogate and interpret the *things* in the project environment "themselves" in more direct way, not only relying upon the members own interpretations and vocations. This enables an analysis of things unsaid, unconscious or possibly un-thought of. Important material metaphors are the (corporate) body, dress codes, houses of significance, like plant layouts and headquarter buildings, and also key machine technology and product materialities. The analysis focuses to a large extent on managing and power along the sexual and gender dimensions, because the material offered here present itself fruitfully to such an analysis. Here implications of the fact that managing investment projects to a large extent is "a man's world" are discussed. Thus questions of culture and/or nature are again revoked.

By way of a conclusion, in chapter eleven, "In Good Company", I summarize some of the main findings, synergic points and continuing questions of the thesis. Issues of qualifying capitalism and modernity are discussed, likewise are homogenous notions of "managing rationality" questioned. "Man the modern maker" seems to have reached a crossroad facing the new millennium. The chapter concludes by reflections on the "re-

invention" of anthropology itself in terms of a re-grounding. Invoking the possibilities that have emerged for a renewed dialogue between the human and social sciences on the one hand and the natural sciences at the other, anthropology and its objects of study might today be reconsidered with another confidence as being part of "the whole" of nature, and also as being engaged with the wider and pressing issues of a world which is now fundamentally globalized and integrated in economic terms. A world, one might add, which displays perverse inequalities and asymmetries of wealth, poverty and power relations. A world in which the democratization and dissemination of productive creation capabilities and the dynamics thereof seem to be more critical than ever. To this re-grounding I propose a turn to a *radical* naturalism in anthropology.

PART I

SITUATING "THE PROJECTS" IN THEORY AND METHOD

Chapter One

1. Managing, Modernization and Economic Rationality

There can be no doubt that all our knowledge begins with experience… But though all our knowledge begins with experience, it does not follow that it all arises out of experience.
(Immanuel Kant 1929 [2003]: 41)

The dichotomy between pleasure and pain is socially constructed to make the economy work.
(Norman O. Brown 1991: 190)

During the last decade or two we have witnessed a substantive Renaissance in the fields of industrial, organizational and business anthropology – in the anthropology of formal, purposeful organizations. We need to conceptualize it as a rebirth because anthropology was one of the prominent disciplinary founding fathers of organization studies at large, especially significant in forming the Human Relations school, seriously launched in Chicago from World War I and into the 1930s, spurred among other efforts most notably by the famous Hawthorne studies (cf. Baba 1986; Schwartzman 1993; Jordan 2003). Early anthropological industrial "factory studies" were for example conducted (cf. Gouldner 1954), and arguably Jaques (1951).

It was anthropologists who established the first academic journal in organizational behavior (*Human Organization*), and the social anthropologist W. F. Whyte, a student of Radcliffe-Brown, who wrote the first textbook from the same field (1969). It was not until the 1950s "organization theory" emerged, and then as a blend of theory of administration and systems theory. In turn systems theory merged with organization sociology and organization psychology during the 1960s (Czarniawska 2007: 62). Since the earliest days, and continuing until quite recently, however, the fields of anthropology and organization studies have been drifting apart and have had very little dealings with each other, at least when considering *organizations* as the unit of analysis (cf. Czarniawska-Joerges 1992).

The recent emerging trends both with regards to theory and in some ethnographic studies in putting anthropology and organization studies "back together", is noted by several authors (i.e. Bate 1997; Linstead 1997). These authors point to a number of specific research areas and themes were anthropological perspectives and methods could enhance organization studies (cf. Czarniawska 2001). One key anthology of organizational anthropology, "Inside organizations" (Gellner and Hirsch 2001), covers for example case studies of both science, business and state agencies. In his brief overview of the field of organizational ethnography Van Maanen (2001) classify the research conducted in this field in four broad categories. These are studies of a) organizational processes and informal relations, b) organizational identity and change,

c) organizational environments, and of d) organizational morality and conflict. However, it is still too early to draw any definite conclusions about whether the re-marriage will continue to strengthen and develop fruitfully in the years to come. History has shown a number of false dawns before, not the least when the management gurus and best selling business authors got hold of the concept of "culture" in the early 1980s (i.e. Deal and Kennedy 1982; Peters and Waterman 1982).

They introduced a very different conception of culture than heralded by most writers in anthropology, and after first hailing culture as the "essential quality" of successful companies, ten years later when corporations around the world had spent fortunes in various "culture improvement" initiatives without much "success" they dramatically exorcized their own invention as useless (Bate 1997). Anthropology, from where the ideas about culture was adopted and recast, was also injured by the blow. A similar scenario is unlikely to unfold again, but it remains to be seen if organizational anthropology will develop into a strong and long-lasting field of research inquiry, a discipline with relevance to practitioners, the organizations and the societies in which they are shaped and reshaped – a contemporary society which in general terms as noted above rightfully might be labeled a "society of organizations".

However, as noted earlier the approach in the present work depicts managing actions in the investment projects of the Hydro corporation as the starting point for an analysis of the reproduction of relations at several interconnected levels. While the unit of observation is the investment projects in the Hydro corporation, this does not limit the units of analysis. Rather than depicting the projects and the corporation as restricting the units of analysis, the present work utilizes them as the empirical context from which both broader and deeper issues are investigated.

Instrumental rationality and the mediums of modernity

With the formal context of the present study being managing practices whitin the corporate organizational form, it immediately projects us into the conceptual landscape

of discourses on rationality, and indeed "instrumental rationality". Thus the whole debate about modernization is implied. From Kant to Weber, Habermas and Giddens, to name a few, these are obviously huge discourses. At the core stands the differentiation of the value spheres. Simplified this is the notion of the differentiation of the "the big three" (Wilber 1996) into different realms of life; of the Good, the True and the Beautiful. A monumental basis for these debates is Kant's influential "Critique"-trilogy: of pure reason (objective science); of practical reason (morals); and of judgment (aesthetic judgment and art).

In his essay "The global conversation" ["Den globale samtalen"], the anthropologist Tord Larsen argues that the modernization processes emerged with the constitution of a fundamental "package" of abstractions; which subsequently has been exported globally as the *intercommunicative* infrastructural basis upon which cross-cultural commensurability has been enabled. This "package" includes the ideas of the *abstract autonomous self*; of *abstract value* (modern money which makes comparable values from different value spheres in so-called "pre-modern" societies, e.g. cattle, food and land); *abstract time and work* (enabling for example the distinction between working hours and leisure time, which, one might add, by implication makes the unemployed also lack leisure time); and *abstract place and space* (e.g. length units, straight angles and mathematical calculations that rendered possible the measurement of all particular spaces).

Larsen argues that these homogenizations, including that of the individual, value, time, work and space, was a locally produced medium of communication that now is providing the basis upon which a global modernity is made possible. Indeed, he proposes that modernity might be defined as the medium making "globality", or globalization, possible (1996: 130-131).

Communication is also, of course, fundamental in Habermas' definition of rationality. Rationality is according to Habermas (1984) a fundamentally social construct, because rationality is developed, exchanged and evaluated reciprocally between actors and audiences. In fact, rationality and sociality, seen as requirements of

justification expressively conveyed in social interaction, is immanent to such a degree that the rationality theme is constitutive of sociality itself; as "… as social practices distinct self-logic" (Vetlesen 2006: 202, *my trans.*). The minimum requirement of rationality, following Habermas' discussion of "reason and the rationalization of society", is that it is critizisable and justifiable communicative action. And this is a form of social practice particularly characteristic of modern societies.

Framed in light of this discussion, what I want to investigate, as a subject of inquiry, is the practices of managing investment projects as heuristically for now conceived of as practices of "instrumental rationality". I conclude not so much either by confirming or criticizing a notion of an all-encompassing system that colonizes the life-world. Rather, from an investigation of an allegedly source domain of these colonizing processes, from the midst of the purported "cognitive-instrumental value sphere" of the contemporary globalized capitalist economy, as it were, I argue that the particular example investigated here shows that knowledge claims are validated by an entangled corpus of value legitimations which I label "mixed regimes of rationality". The notion of the "system" as a homogenous and hegemonically colonizing conceptualization seems to be too undifferentiated, and I argue that rather than (only) colonizing the life-world, the source domain itself is differentially constituted on value claims drawing extensively from the other value domains as well, the moral and the aesthetic-expressive – in sum constituting what I call "mixed regimes of rationality" (see especially chapter five, six and eleven).

The context of the present study, the "production" of corporate capitalist investment projects, highlights some of the shortcomings of much of economic anthropology in relation to these issues. A major problem lies in its almost exclusive focus on barter, exchange and transactions, and on consumption; to the expense of production in various forms, not the least "knowledge-based" production.[17] As Reidar Grønhaug notes: "In terms of economy… has contemporary anthropologists by and

[17] See for example the updated text book in economic anthropology provided by Wilk and Cliggett (2007) which lacks the entry "knowledge" in its index.

large abdicated from the task, with an exception from some studies on consumption and identity" (2001: 66, *my trans*.). Industrial production has, indeed, received its fair share of attention in industrial sociology and anthropology, often with a Marxist outlook.

The approach in the present work also draws to some extent upon Marxist notions of capital. However, for all their differences Marxist theory share with classical (and to some extent neo-classical) economic theories one basic fundamental premise; the labor theory of value.[18] As Reinert argues, production, knowledge and invention was lost in the economic theory of Adam Smith, because he reduced both production and trade to 'labor hours'. David Ricardo, following Smith in this respect, created an "… even more abstract theory of 'labor' – a concept devoid of any qualities – as the measuring rod for value" (2007: 41).

Because the proper interpretation of Marx theory of value, as Harvey notes, "… is a matter of great contention" (2006: 35), I shall here just briefly outline some of the key issues related to the concerns here.[19] According to Reinert, while introducing this foreign element into the German tradition Marx reached for Ricardo's labor theory of value when outlining solutions to the problems of capitalism. For example Nicholas Kaldor wrote somewhat provocatively of this in 1955: "… the Marxian theory is really only a simplified version of Ricardo, clothed in a different garb" (quoted in Reinert 2007: 41). In a similar vein Polanyi writes about "… Marx's too close adherence to Ricardo and the traditions of liberal economics" (2001[1957]: 131). While several academic disputes are touched upon here, as an example Harvey (2006) provides a

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[18] Obviously a key characteristic of the neo-classical turn was its move away from the labor theories of value, and through the "marginalist revolution" has rather been focused on marginal utility ("utility maximization" rather than "profit maximization") where labor is taken into account as a "factor of production". In neo-classical economics, that is modern mainstream economics, the focus shifted to perfect market competition, supply and demand concerns, general equilibrium theory, individual wants and needs, etc. Nonetheless, for example Jevons, one of the founders of neo-classical economics, considered his marginal analysis consistent with the labor theory of value. His proposition was that equilibrium marginal utility equaled marginal labor value. A critique of mainstream neo-classical economics is provided below.

[19] Some of the arguably most in-depth investigations and reconstitutions of Marx labor theory of value, establishing the core premises upon which the labor theory rests, is to be found in Johansen's (1986, 1993) works on value and "labour time content", both unfortunately still only available in Norwegian.

contrasting perspective in his discussion of the critical distinction at the heart of Marx labor theory of value; between "labor" (as a measure of value) and "labor power" (as a commodity traded on the market): "The distinction between labour and labour power leads Marx to a quite pivotal conclusion – one that allows him to rectify and transform Ricardo's labour theory of value" (ibid.: 23). Although opposite to Kaldor in seeing Marx theory as more advanced than Ricardo, also Harvey acknowledges the relationship between the two. Marx "rectified" and transformed Ricardo's theory because in the latter labour and labour power were indistinguishable (ibid.).

In Marx's analysis the "problem of profit", of its origin, is solved by identifying a commodity that has a special capacity to produce greater value than it itself has. "Labour power is such commodity" (ibid.: 24). It can produce *surplus value*, but to do so it requires the existence of wage labor (to enable the commodification of labor). In Marx words: "… the value of labour power, and the value which that labour power creates in the labour process, are two entirely different magnitudes".[20] And in this context the famous notion of "exploitation" becomes relevant, because it lies at the core of the production of surplus value. As Harvey notes: "The excess of the value that labourers embody in commodities relative to the value they require for their own reproduction measures the exploitation of labour in production" (2006: 23).

The fundamental premise of a "purely" quantitative labor theory of value, has radical consequences for Marxist inspired analysis of production in economic anthropology; among others it largely disallows profound qualitative differentiations of capitalist economic activities in terms of its potential for "value creation", and thus subsequently for its potential in wealth production and societal reproduction. Thus, Marxist analysis, although being part of the "other canon" tradition (see below), like the classical theories also dominating contemporary discourses of modern economy is fuelled by a homogeneous and standardized notion of "labor".

Marx outlined two main ways of producing surplus value: 1) *absolute* surplus value, by increasing the number of labor hours per worker (and thus an increase in the

[20] In *Capital*, vol. 1., p. 1993 (quoted in Harvey 2006: 23).

exploitation of labor in absolute terms); 2) *relative* surplus value, by cheapening the means of consumption that make up the workers' "shopping basket". This is defined by an increase in surplus labor time, from decrease in the labour time aggregated in the means of consumption purchased from wages, due to increased productivity. A third way of increased surplus value is however readily available, simply by increasing in the number of workers and thus labor hours. As Lars Gule writes: "While Marx saw the importance in increasing the number of workers, he mixed these forms of surplus production. Bunzel, however, is drawing a clear distinction and terms surplus value production through increased numbers *general…"* (2003: 532).[21] For the present purpose, all three forms of surplus value are based on purely quantitative labor hour "accounting", although relative surplus value obviously incorporates technological changes that increases productivity and reduces the number of labor hours needed to accomplish a task.

Based in Marx theory of capital the anthropologist and philosopher Stein E. Johansen has discovered a fourth form of surplus value. Labeled "qualitative" surplus value it is defined by increase in surplus labor time from decrease in the labor time aggregated in the consumption products (the "shopping basket") purchased from wages; due to *substitution* of consumption products (purchased from wages) with *different* kinds of consumption products containing *less* aggregated labor time than those replaced.[22] It thus describes the changes in subjective consumption needs and wants, and subsequently the relative increase or decrease in labor hours required to produce the totality of consumption products. Gule notes that: "This mode of surplus value production establishes a heavily trafficked bridge between the physical and psychological spheres of consumption" (2003: 534). This form of surplus value is thus a

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[21] The outline of the significant distinction between general and absolute surplus value is found in Bunzel (1979), unfortunately only available in Danish.

[22] In addition to personal communications, unfortunately still only presented at a seminar at Gislinge gård in Denmark in August 1996. Also attending, Bunzel immediately recognised the importance of the conception. See Gule (2003: 533-534) for a brief description of qualitative surplus value.

move in the direction of more qualitatively differentiated assessments of various economic activities, as argued for in the "other canon" tradition of economic thought.

With respect to the labor theory of value it nonetheless seems, as Reinert notes, that communism and liberalism became if not siblings, at least cousins; in its "… abstract theoretical systems towering above the trivial details of the real world" (2007: 41). Choosing to gloss over many of the "great contentions" in these debates, this overall situation seems to create constraints that consequentially reduce and conflate the modern economic sphere of activities, in the way it downplays notions of human creative powers, imagination, knowledge and wisdom; of the "human spirit", as for example the German historical school of economics and their engineering tradition stressed. This latter domain is vividly described by Goethe's term "Willenskraft" and Nietzsches "Geist und Willenskapital", Man's "wit and will" (cf. Reinert and Reinert 2006).

Some of these notions, including those of "Schöpfungskraft" and "Schöpfungslust" (the power, desire and joy of creation), akin to possibly more familiar constructs like "homo faber" and "homo ludens", man the maker and player, were continuing ideas in the German economic and philosophy tradition. Articulated by thinkers like Henri Bergson, Hannah Arendt and Max Frisch, homo faber refers to humans as controlling the environment through tools. Henri Bergson referred to it in Creative Evolution (1907) as defining intelligence in its original sense: as the "faculty of manufacturing artificial objects, especially tools to make tools, and of indefinitely varying the manufacture" (1907 [2007]: 153-154). Homo faber identifies "man as the tool-making animal", but it is also indicates "the working man", which is confronted and completed with "homo ludens"; the "playing man" concerned with amusements, humour and leisure. Homo faber is also related to the concept of "deus faber", god the creator or the "making god".

The power to create is related to both the joy and pain of the process of creation. A notion captured by the old Hindu conceptions of "creation and destruction" and introduced to 19th Century European discourse as "creative destruction" by Nietzsche,

and brought into economics by Werner Sombart, and subsequently made famuous by Schumpeter (Reinert and Reinert 2006).

These ideas are perceived of as major "spiritually" based "productive powers" that create innovations and fundamentally different types of economic activities; reflected in the 20th Century in Schumpeter's notion of the "entrepreneur" (1939, 1943), with in turn different types of consequences for bourgeois society, for economic and social life. Most of this tradition seems to be lacking in contemporary mainstream economics, but is recreated by the "other canon".

The present study, with its core exploratory concepts of managing, technology, economy, knowledge and knowing, will seek to incorporate into the modern economic, organization aand industrial anthropology, the substantial insights of the so-called "other canon" of the history of economic thought and policy, which is based exactly upon that which is excluded by neo-classical (and also to a limited degree by Marxist) economic theory. "The other canon" is "re-assembled" and outlined in its many different aspects by a large research community, and most holistically represented by the scholar in the history of economic theory, Erik S. Reinert, in a series of works (cf. 2007).[23]

"The other canon" – knowledge and production back at the core

By no means trying to recapture the entire "forgotten tradition" of the modern economic history of the "other canon", I want to outline a few key notions of the tradition to give the reader a somewhat broader historical and intellectual background in which the present empirical case and thesis is situated. The "other canon" has resurged and reopened and (re)created a doorway to a different world of economics, a world that has

[23] For bibliography's of the "other canon" tradition see www.theothercanon.org.

been there "all along", largely forgotten in the contemporary, yet not be quits. This is a world with firm historical, philosophical, theoretical and political roots.

Because this larglely "lost world" is now, in recent years, firmly rematerialized in a coherent and systematic fashion in the textual realm of "the other canon", the time seems ripe for its reappearance on political stage and thus with implications for the everyday lives of people throughout the world as well. Notable thinkers and traditions of the other canon include Giovanni Botero and Antonia Serra from the late 16th and early 17th Century to Freidrich List, from German cameralism and anti-physiocracy to the German historical school, to Torstein Veblen and the institutional school in one direction and to Schumpeter and evolutionary economics in another. Marx and Keynes are also contributors.[24] As will be exemplified by the present study, the historical trajectory of circumstance chronicled in this stream of literature is in practice well alive and breathing in pockets of the contemporary capitalist formations.

If it is not acknowledged in mainstream economic theory, it is so in parts of the wider Norwegian industrial context in which Hydro operates. Here some of the key points that are emphasized in "the other canon" are still very much present. It can be illustrated by a quote from Stein Lier Hansen, the CEO ["adm.dir."] of "Norsk Industri" (Federation of Norwegian Industry) – which with its 2000 member companies is the largest of all of the employer organizations organized by NHO (The Confederation of Norwegian Enterprise – the main representative body for Norwegian employers): "Those who predicted the imminent demise of industry were seriously mistaken. Not only is the sector as vital as ever before, but it could also finance the welfare challenges Norway are facing, if the politicians provide the enabling conditions required" (*my trans*.).[25] Hansen presupposes that politicians do not wish to revert to the situation in 2002-2003 when Norway went through a year and a half with strong rates of exchange. According to Hansen this caused Norway to loose 50 industrial jobs every day. "As

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[24] For a figure summarizing the "family three" of "the other canon" economics history see: http://www.othercanon.org/papers/tree.html (January 2, 2008).
[25] Norsk Industri, Annual Report (2006: 14).

every industrial job generates three-four other jobs in other sectors… it is of critical importance… that industry has framework conditions that stimulate growth" (ibid.) [*my trans*.].

Following the credo that economic activities in modern capitalism is *qualitatively* different, one of the main points in the other canon is that activities yielding high potential for wealth creation are those that creates, emulates and absorbs new knowledge and technology (ideas, inventions, innovations). The conditions that brings forth such activities has been known since the Renaissance and the Italian city states from which capitalism emerged. Simplified the core tenets are that wealth is created in synergistic clusters of activities with a complex division of labor, displaying increasing returns and continuous and innovative mechanization. Here understanding of both the importance of "the common weal" and the imaginative creational powers of the individuals are emphasized.

These activities are generally found in "manufacturing", enabled by the machine process and advances in organizing. Thus some knowledge is more valuable in terms of its capacity for wealth creation than other knowledge, and consequently for a state or nation to prosper it is in their interest to create and protect such knowledge. In the view of one of the historical roots of the other canon, the "real-ökonomisch mercantilism, cameralism and Colbertism," this valuable knowledge emanates from the mind and souls of men. Not taking the latter two into consideration would deprive any theory of understanding the processes of which Man's material condition is reproduced and increased, that is, the processes of wealth creation and economic growth.[26]

The designation attached to the economic activities that best absorbs and exploits this new and valuable knowledge in economic terms is "increasing returns" (cf. Arthur 1994). As the concept is used throughout the other canon it refers both to the more conventional economies of scale and to Schumpeter's conception of historical increasing returns. Schumpeter's term implies both "… the shift in the production function resulting from technical change" (Reinert 1997: 280), and the "pure" scale

[26] See Reinert (1997: 250).

effects. For example, and significantly for the present debate on global inequalities, according to the other canon will activities in agriculture and mining even in principle never provide the foundation for wealth creation. Farming is always subject to "diminishing returns", and must thus be considered an economic activity of fundamentally different character than (many forms of) manufacturing and advanced services.[27] The recent resurgence of the concept of "knowledge" to the forefront of economic discourse, further elaborated upon below, I argue is a sign of the revitalization of the "Renaissance economics" of the other canon.

With its over 100 years in highly research, knowledge and technology intensive industrial businesses, Hydro illustrates the other canon and increasing returns economics in an exemplary manner.

Economic anthropology revisited

Economic anthropology can briefly be categorized into three broad bodies of theories and knowledge; 1) Neoclassical microeconomics, or utilitarianism for short, 2) Political economy (including Marxist *critique* of political economy), and 3) Moral or cultural economics. For a summary and a discussion of the strengths and weaknesses of all three bodies of thought, and some possible integrations, see Wilk and Cliggett (2007). The three broad modes reflects different basic views of rationality or faces of *human nature*; the selfish, social, and moral being (ibid.: 190). Notably, in this classification "the other canon" has more or less disappeared from view, completely overshadowed by utilitarianism. In addition to the "other canon" I will in terms of a main level theoretical framework throughout the thesis eclectically draw insights from all of these three traditions, in line with Wilk and Cliggett's invitation:

> "… a better way to think about the three models is to recognize that in practice we are always mixing them, shuffling through to find the one that best fits, or combining them on an ad hoc and case-by-case basis. In

[27] See Appendix I for a schematic outline of the main characteristics of "The Other Canon" in contrast to the "Standard Canon", and Reinert (2007: 33) for the "The Other Canon" *family tree* of economics (both are also found at http://www.othercanon.org/).

> practice, most anthropologists make hybrid models by combining bits and pieces of middle-level theory, rules of thumb, and their own experiences" (2007: 184).

From the starting point in the empirical material and the focus on the *genesis* of investment projects, I have found the utilitarist neoclassical microeconomics is of lesser constructive relevance, criticized below and thus in the present work to a large extent "substituted" by "the other canon" insights. I will on the other hand draw extensively on the theoretical perspectives in various streams of both *political economy* (and its critique), and *moral and cultural economics*. Indeed, as argued by Edelman and Haugerud (2005: 30), the specialization and atomization of social sciences and the humanities have been accompanied in the 20th century by a growing division between approaches to social change based on economics and politics at the one hand, and those based on cultural values and beliefs on the other. In line with the trans-disciplinary, hybrid and not the least integrative ambition of the present work, I seek here to bring aspects of these diverging streams of thought together. I interpret "the other canon" economics also in a light that tries to bridge insights from political economy, cultural economy and aspects of microeconomics.

While the political economy influence in the present work is obvious, the influence of "cultural economics" is possibly more unclear. While differentiating these two "social" (political economy) and "moral" (cultural economy) theoretical perspectives is sometimes diffcult, as noted above, a key is their different approach to rationality and human nature. The latter approaches tend to emphasize more that symbolic communication and systems of meaning are, possibly *the*, fundamental elements of human nature. As noted by Wilk and Cliggett:

> "A cultural theory of economics therefore focuses on the moral meanings of work, money, obligations, and other forms of exchange. The economy becomes a symbolic reflection of the cultural order and of the sense of right and wrong that people adhere to within that cultural order" (2007: 120).

Thinkers from Weber and Malinowski, to Sahlins and Geertz argue that economic behaviour is deeply embedded and constituted in cultural beliefs. Although universal human needs are often recognized, as with Malinowski, the form these needs attain are seen to be culturally variable. In various ways this tradition relativises rationality itself, and depicts it as a social or cultural "product". This relativisation entails various implications, for example on the one hand a ranking and evaluation of cultures according to "levels of rationality", or on the other hand, a "post-modern" perspectivism perceiving morality and values as culturally relative symbolic systems of signs. Whatever their differences many writers in this tradition "… thinks that the symbolic aspect of cultural order is the most basic and that this is why it is revealed most clearly through the study of primitive economic systems" (ibid.: 143). Recent examples of this kind of research, and also heavily influenced by political economy, is Hart's (2000), Bell's (2004) and Blim's (2005) work on wealth, money and inequality in contemporary capitalism. When investigating aspects of economic life, moral issueas are never far away, and in the present study the "cultural" approach to economics is, focused by the subject matter of industrial investment projects, on the creation and production of wealth, and the moral and cultural corollaries thus implied.[28]

While this is not the place to revoke the debate on formalism and substantivism in anthropology, a brief note of relevance is appropriate. The formalists[29] have been clearly influenced by neo-classical utilitarianism in their attempts to describe "pre-modern" and small-scale societies. Even if these societies may not have capital or markets it is supposed that neoclassical economics has developed concepts and models with general value for understanding all societies; especially notions related to perceiving actors as value maximizing, rational game players, transaction seeking, and generally "economizing". Briefly they define "economy" as the study of the relationships between goals and limited resources with alternative outlets. Some of the

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[28] My own position on some of the basic assumptions in this area, as argued for example in chapter four, is that knowledge beyond culture is indeed possible. On the question if morality and values beyond culture is possible, I prefer to be agnostic while nevertheless fostering an intuitive inclination that it is.
[29] For example Homans (1958), Barth (1967), and Schneider (1974).

main problems is of course the lack of understanding major distinction between pre-modern and modern economics, and their subsumation under the hegemonic "standard" neo-classical canon.

The substantivists[30] are more similar to the "other canon" in its concrete, historical and empirical outlook. Their perspective is to see the economy more in terms of production and distribution of important scarce material goods, were the production and distribution process involves a number of people. Here, economy tends to become a part system in any society, but, as their primary field is pre-modern societies, a part system arguably more integrated with other systems of society (were the differentiation of the value spheres has not unfolded). While the formalists define economy as a method which in principle can be used to study any object, the substantivists define economy as a particular object were the methods need to be adjusted accordingly, especially differentiated in terms of pre-modern and modern economies.

Arguably the most significant contribution of substantivism is Polanyi's trilateral classification of economic forms of exchange: market (synchronous exchange), redistribution (delayed and asymmetrical or vertical exchange), and reciprocity (delayed and symmetrical or horizontal exchange). Different economies are perceived as constituting a mixture of these three ideal forms, while neo-classical economics is seen as adequate only in the study of market exhange, also the form seen as dominant in modern societies. Since the definitions of economy have been considerably different, fruitful discussion between these traditions have been difficult and confusing, something acknowledged in the contemporary debate. For the purpose of the present study, here, we may acknowledge that both sides of the discourse operates with a more or less explicit "homogeneous" and neo-classically inspired notion of modern economies and economic activities and processes. The effects of the "standard canon" of neo-classical economics seems thus to have been pervasive to the extent economic anthropology has been directly or indirectly exploring modern economic relations. The consequences thereof need more elaboration.

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[30] Most significantly Polanyi (1957), Dalton (1969), and Sahlins (1972).

The neoliberal triumph and the neo-classical legitimation

The broader ideological context in which capitalist enterprises need to operate in the contemporary situation of economic globalization is as noted above neoliberalism, or better, neoliberalization. I will refer to neoliberalization as the practical realizations of the neoliberal ideological program. That neoliberalism, in a reifying expression, is the "ideology of our time" and has been so for about a quarter of a century, should be a fairly well documented by now. A working definition of the term might be adopted from Harvey:

> "Neoliberalism is… a theory of political economic practices that proposes that human well-being can best be advanced by liberating individual entrepreneurial freedoms and skills within an institutional framework characterized by strong private property rights, free markets and free trade. The role of the state is to create and preserve an institutional framework appropriate to such practices. (…) Furthermore, if markets do not exist (in areas such as land, water, education, health care, social security, or environmental pollution) then they must be created, by state action if necessary. But beyond these tasks the state should not venture" (Harvey 2005: 2).

Neoliberalism's intellectual origins, especially in terms of neo-classical economic theory, has until recently been poorly understood. Due to a series of recent publications, we now have the knowledge necessary to assess the origins of neoliberalism and unfold many of its meanings and implications.[31]

"Neoliberalism", although ambivalent along several dimensions, is the common term now used to describe the transformations capitalism has undergone since the turning points of the 1970s and 1980s, as a response to the "structural crisis" in the capitalist system of the 1970s. The crisis made us enter a more or less global "neoliberal society", and, as noted in the introduction, has since constituted a "culture of

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[31] See for example Comaroff and Comaroff (2000, 2001); Duménil and Lévy (2004); Harvey (2005); Epstein (2005); Edelman and Haugerud (2005); Fullbrook (2007).

neoliberalism" (Comaroff and Comaroff 2001), or a "neoliberal culture complex" of global reach (cf. Hannerz 2007). As will described in chapter eight, a defining feature of the neoliberal order has been the restoration of power of a particular form of a capitalist class, often mistakenly euphemized as "market powers"; that which broadly can be described as "finance". Following the authors above, by "finance" it is not only meant the financial sector of the economy, but the "… complex of upper capitalist classes, whose property materializes in the holding of securities (stock shares, bonds, Treasury Bills, etc.), and financial institutions (central banks, banks, funds, etc.)" (Duménil and Lévy 2004: 16).

Following the extensive documentation of the research on neoliberalism, we concur that the present predicament is indeed one of globalization, but possibly more importantly, a neoliberal "financialized" globalization. Recently also a few anthropological analyzes have ventured upon describing and understanding finance capitalism. These include broader reflections on culture and "millennial capitalism" (Comaroff and Comaroff 2000) and "culture and finance capital" (Jameson 1997); attempts at locally situating finance capitalism in key Wall Street agencies (Ho 2005); discussions of the "failure of economic knowledge" in Japanese financial markets (Hirokazu and Riles 2005); and analysis of finance trader's activities, and how the sweeping digitalization of financial exchanges and trading has transformed "economic cultures and the craft of speculation" (Zaloom 2003, 2006). Relevant issues from these works will be introduced as the analysis unfolds in the present thesis and the discussion of neoliberalization and financialization picks up in Part III of the thesis. However, the legitimating of neoliberalism in neo-classical, utilitarian, economic theory must be settled here.

According not only to proponents of "the other canon", neo-classical economics has recently received strong criticism. A critical academic debate related to the philosophical premises of modern economic theory has ensued. It is re-evaluating some of the basic premises of neo-classical theory, for example its focus on laws of *equilibrium* related to some theoretical variable (cf. Hausman 1994). In these debates

the mainstream field of economics is criticized for having abandoned its aim of being an empirical science of human behavior, and by now rather resembling a branch of mathematics. Its predicative failures also position economics as a "peculiar science" (ibid.). The critiques of mainstream economics for being out of touch with reality has reached a level were even members of its inter-sanctum publicly pronounce it. Exemplified by six winners of the "Bank of Sweden Prize for Economics", the so-called "Nobel Prize in Economics", an insider view of economics as a "troubled" science is given:

> "… economics has become increasingly an arcane branch of mathematics rather than dealing with real economic problems."
> (Milton Friedman)
>
> "[Economics as taught] in America's graduate schools... bears testimony to a triumph of ideology over science."
> (Joseph Stiglitz)
>
> "Existing economics is a theoretical [meaning mathematical] system which floats in the air and which bears little relation to what happens in the real world."
> (Ronald Coase)
>
> "Page after page of professional economic journals are filled with mathematical formulas […] Year after year economic theorists continue to produce scores of mathematical models and to explore in great detail their formal properties; and the econometricians fit algebraic functions of all possible shapes to essentially the same sets of data."
> (Wassily Leontief)
>
> "Today if you ask a mainstream economist a question about almost any aspect of economic life, the response will be: suppose we model that situation and see what happens…modern mainstream economics consists of little else but examples of this process."
> (Robert Solow)

These quotes have been assembled by the "Post-autistic economics network",[32] launched in the summer of 2000, and now comprising thousands of professional economists from a range of countries. The movement is, beneath the banner of "sanity, humanity and science", advocating for the economics education and research to reform in the following ways, relevant to the above discussions in economic anthropology: To broaden the definition of "economic man", and not only to include the self-interested, autonomous rational optimizer; to recognize the importance of culture, to consider history, to advocate a new theory of knowledge, to ground theoretical claims in empirical findings, to expand the set of methods and to facilitate interdisciplinary dialogue. Since September of 2000, the Post-autistic economics network also publishes their own journal, "The Post-autistic economics review".

In reviewing the intellectual history of neoliberalism and neo-classical economics as its academic legitimation, Edward Fullbrook conveys some key insights of contemporary political economy. In his argument, western universities both gave rise to neoliberalism and continue to be its primary advocates. Neoliberalism, he states: "… out of its distant, bizarre and unworldly origins it has, via the United States Air Force (that is not a misprint), and university economics departments, become the political ideology that today rules the UK, the US and most of the world" (2007: 161). As Fullbrook argues, after the Second World War the United States has increasingly determined the shape of economics worldwide. A primary engineering center of this situation is attributed to a large degree to the US Department of Defense, especially its Navy and Air Force. One of his passages is worthy of a lengthy quotation:

> "Beginning in the late 1950s it lavishly funded university research in mathematical economics. Military planners believed that game theory and linear programming had potential use for national defense. And, although it now seems ridiculous, they held out the same hope for mathematical solutions of 'general equilibrium', the theoretical core of neo-classical economics. The really big event, the one that would make neo-liberalism the ideology of our time, came in 1965 when RAND, the research and development wing of the US Air Force, created a lavish fellowship program

[32] See http://www.paecon.net/ (December 1 2007).

> for economics graduate students at the Universities of California, Harvard, Stanford, Yale, Chicago, Columbia and Princeton, and in addition provided post-doctoral funds for those who best fitted the mould. These seven economics departments, along with that of MIT – an institution long regarded by many as a branch of Pentagon – have subsequently come to dominate economics globally to an astonishing extent. They control the three most prestigious economics journals, in which papers by their staff and PhDs predominate. Of the over 800 economists employed by the World Bank, a majority have been trained at one of the Big Eight. The International Monetary Fund is similarly provided... (2007: 166).

In addition economics pulled off "… one of the greatest public relations coups of all time" (ibid.), when the Central Bank of Sweden managed to "incorporate" their prize in economics into the body of the proper Noble Prizes in the eye of the public, and even many economists today believe that what they call the "Noble Prize for Economics" is in fact a Nobel Prize. Fullbrook contends that the effects of the "Noble Prize" manoeuvering and the RAND program, in combination with economists self-suggestive imagery of its scientific status as matemathical physicists, from the time of emergence of neo-classical economics with Jevons and Walras, "pushed economics over the precipice":

> Within a generation the 'dismal science' became the autistic science. Its storylines increasingly bore scant relevance to economic reality. More and more pages of economics journals were given over to mathematical symbols that, unlike those of real science journals, have no empirical, real-world referents… Out of this enforced fantasy world emerged neo-liberalism in the real-life political world… Given that it was impossible to escape its autism without de-formalising and thereby losing its treasured illusion that economists are kissing-cousins of physicists, *why not demand that the real world change so as to conform to the imaginary world of neo-classical economics*. This is how neo-liberalism came into being and continues to be" (ibid., italics in orginial).

In conjunction with the later description of the "financialized" economic context of the presently investigated investment projects (see chapters seven and eight), these intellectual and political origins of mainstream (neo-classical) economics is worth bearing in mind.

In short, the situation of contemporary economic anthropology, and not only in neoclassical theory, is also to some extent "dismal". In the context of modern economies, the knowledge and production based tradition has largely been lost, or too a limited extent come into view, and major efforts in economic anthropology are devoted to analyses of exchange, circulation, barter, that is in our times much the investigation of "consumption culture" (cf. Douglas and Isherwood 1996; Miller 1997). Although to some extent challenging the image of the animal-like economic man, in seeing identity formation and active meaning construction enacted also through consumption, and thus tries to portrait "consumption as creation", it is still the man the consumer that is portrayed. Man the creative, compassionate and "spiritual" producer with "wit and will" is difficult to detect. As discussed above, in the "other canon" a full-fledged alternative to this hegemony of circulation and exchange is fortunately available.

Chapter Two

2. An Anthropology of Global Corporate Managing

We've seen why commitment is in increasingly scarce supply in the new capitalism, in terms of institutional loyalty… how can you commit to an institution which is not committed to you?
(Richard Sennett 2006: 196).

… there are always, in any society, conflicts between symbolic powers that aim at imposing the vision of legitimate divisions…
(Pierre Bourdieu 1989: 22)

Due to the double contingency of the hegemony of neoclassical economic theory in the economics departments of the universities around the globe, and in the economic and financial institutions that matter, and the ideological triumph of neoliberalism the last quarter of a century, production as the central tenet of economic activity seems to have been forgotten. “In short, all across the political spectrum production as the core of human economic activity was lost” (Reinert 2007: 69). Tracing the history of “management” and “managing”, however, we realize that if this tenet holds true, a significant shift in the legitimating idioms of managing (and by implication modernity itself) have occurred.

This is, obviously, not the place for an extensive review of the history of management or managing in relation to organization studies or industrial sociology. Sufficient and relevant for the purpose here, however, is to note that “scientific management”, understood as Taylorism influenced by the Human Relations School, originated in *engineering* (cf. Shenhav 1999; Czarniawska 2007). And of engineers Latour writes: “… those great despised figures of culture and history” (1996: 24).

The origin of management in engineering is significant in a company like Hydro, traditionally defining themselves as an “engineering culture”. Its approach to managing has been formed by that fact that many managers have been educated, and Hydro has kept a tight research relationship throughout its history, with the formerly called NTH; the “Norwegian Academy of Technology”, now merged with the social and human sciences into NTNU, the “Norwegian University of Science and Technology” (cf. Hård et al. 1997; Andersen 2005; Johannessen et al. 2005; Lie 2005). Here terminology is of the essence. In Norwegian the academy was formerly called “NTH”, Norges Tekniske Høgskole. Similarly, the present day NTNU is in Norwegian “Norges Teknisk-Naturvitenskapelige Universitet”. The key thing to notice is the use of the concept “Teknisk”, which is translated into the English “technology”. However, a direct translation of technology in Norwegian would be “teknologi”, not “teknisk”, and thus the choice of “teknisk” is significant.

NTH was established in 1911, and was formed on a German model emerging out of a discourse on "die Technik" in the second half of the nineteenth century. As outlined by Schatzberg, "… it referred to the practical arts as a whole, and especially those associated with engineers and modern industry" (2006: 487). This conception hinges upon the nineteenth century understanding of technology, as outlined for example by Jacob Bigelow in 1829, as the "… principles, processes, and nomenclatures of the more conspicuous arts, particularly those which involve applications of science, and which may be considered useful" (ibid.: 491). Throughout the nineteenth century the term "technology" remained secondary, and hearkened back to Bacon and the project for a natural history of the arts, later realized with Diderot and the Encyclopédie. The shift in the meaning of "technology" did not occur until the entry to the twentieth century. As will be shown, the practices of managing projects in Hydro that centers around notions of "technology" has still a strong affinity to pre twentieth century concepts and associations related to "teknisk", "teknikk", to "die technik", to the modern Latin term "technologia", and even back to the meanings embodied in the Greek etymology of "tekhne" (and its relationship to the Aristotelian concepts of Poiesis, Praxis and Theoria).

Moreover, as the present description unfolds, it will be illuminated how the practice of managing in recent years, both in Hydro and more generally in the capitalist economy, has shifted its legitimating basis from engineering to economy and finance. I argue that today a "hybrid" legitimating basis for managing in Hydro prevails.[33] Considering the tensions this shift implies, in this sense it echoes and reflects Torstein Veblens distinction between productive and beneficial industrial institutions on the one hand, embodying such things as workmanship, the machine process, and technological knowledge; and pecuniary and parasitic institutions on the other. A distinction between industry and business. Drawing heavily on the German discourse, the German historical school of economics, Torstein Veblen was the first American scholar who made

[33] For a brief summary argument in this respect, see the section "Mongrelizing management" in chapter eleven).

"technology" a key concept in a social theory. Inspired by the way he developed the concept into a sophisticated concept for a critique of capitalism, so will I treat it in the present study. Rather than conflating the whole of the "industrial arts" into concepts of technology as a deterministic form of "applied science", a widespread misconception today, and like the managing practices conducted in Hydro investment projects testifies, I will rather treat the concept in an open-ended "polysemic" notion subject to inquiry (see Part II).

Hydro's historical heritage and positioning in the "engineering managing" tradition requires a few more words. Management based in engineering was canonized by Taylor's (1911) principles of scientific management. In tracing the genesis of management to engineering, Shenhav (1999) has shown how management later differentiated itself from engineering, and how the key managing concepts of "systematization" and "standardization", "productivity" and "efficiency", hallmarks of disseminating instrumental rationality, were translated from the "technical" field to the operations of the whole organization. In such a light we might appreciate that managing as an "autonomous" activity and domain of social reality, grew out of the modernization processes proclivities of abstracting, classifying and "autonomizing" ontological qualities. It was noted above that the modernization processes emerged with the constitution of a fundamental "package" of abstractions constituting the *intercommunicative* infrastructure of modern globality; the abstracting, dividing and "compartmentalization" of the self, of value, work, time and space.

While obviously having been formed by both American and German traditions of engineering management, on the other hand Hydro have also been characterized by the socio-technical tradition (e.g. Trist 1981) that co-constituted the Human Relations school of organizational thought, with its practical goal of turning adversarial behavior in the organization into productive collaboration (Whyte 1984; Lysgaard 1961; Baba 1986). For different reasons, in Hydro from the mid 1960s an explicit resistance or alternative to both the American based Taylorism and the British human relations thinking emerged (cf. Johannessen et al. 2005).

Of especial signification in relation to this alternative, is the historical documentation that in Norway, like in Britain, and unlike the US, the main arguments for introducing the Human Relations programs was the ideology of enhancing democracy at the workplace. In fact, the major collaborative effort of introducing these programs, from the researcher side, was a joint British-Norwegian team (Emery and Thorsrud 1967). However, unlike the British version of Human Relations, the Industrial Democracy Program, which Hydro were a part, wanted to go directly into "production and the core issues" (ibid.). Something they felt was not being done in Britain.

We might also note that the major program, the "Norwegian Industrial Democracy Program" from 1962, was much more successfully implemented in Norway. A national strategy for the "humanization of work" was an outcome of these initiatives. It led to the idiosyncratic "Norwegian model" of work life relations; manifested both at the macro-level as major agreements on collaboration between the key work life organization parties, and at the micro-level as particular collaborative, democratized ways of working in each company. It can be described as a particular and interrelated "macro and micro model" (Hernes 2007).

The program had three main phases: first, creating improved representative systems of joint consultation, involving the creation of "working directors"; secondly it progressed to workplace democracy with employees gaining the authority, resources and power to change their own work organization and when and where it was appropriate; third, this led to four major experiments on work reorganization in Norwegian industry. The national strategy emerging out of the program incorporated a part in the Norwegian law on working conditions which gave workers the right to demand jobs conforming to certain socio-technical and psychological principles and requirements of work practice, like: variety of work, learning opportunities, own decision making power, organizational support, social recognition, and a desirable future. Subsequently emerged a separate program for increasing trade union competence in technology, and implicitly trade union power.

Concepts that emerged out of the Norwegian Industrial Democracy Program, in addition to the many issues above, and that later were disseminated world-wide, and quite successfully implemented in Japan, were for example the ideas of "autonomous work groups", or "semi-autonomous work groups" ["selvstyrte grupper"], forerunners of concepts like "self managing" and "self directed work teams" (cf. Thorsrud and Emery 1970; Emery and Thorsrud 1976; Mumford 1997). Importantly, when these notions were exported out of Norway, for example to Sweden and other places, the core democratization and humanization values were to a large extent lost.[34] In the discourse of management, Emery and Thorsrud interestingly discussed the possibility of a shift in the function of management, from internal coordination and control to regulation of the company's "boundary conditions". Hydro was one of the main actors in the Norwegian Industrial Democracy Program, and as will be shown later, provides contemporary interesting subversive notions and practices of managing, seen in light of the ideas of *one* globally hegemonical "managerialism".

Other notable contributions that has developed from the socio-technical tradition, has been "academic crossroads" that weaves together social and technological issues that has focused for example on the social mechanisms in the construction of technology (e.g. Bijker, Hughes, and Pinch 1987), scientific facts (e.g. Latour 1987), the conditions for knowledge production in current western science and society (e.g. Nowotny, Scott and Gibbons 2002), and, especially in Scandinavia, the status of knowledge development processes in organizational contexts characterized by work life democratization (Greenwood and Levin 1998; Gibbons et al. 1994).

In an antropological study of industrial investment projects, as indicated above the concept of "technology" is obviously central. In all of its various definitions it is easy to miss the fact that it can be seen both as the study of the object and as an object of study. Some of the wider implications of "technology" are indicated by Pfaffenberger in his argument against the "standard view" of technology:

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[34] Personal communication made by the experienced Norwegian work life and action researcher Prof. Morten Levin.

> "… the sociotechnical system concept puts forward a universal conception of human technological activity, in which complex social structures, nonverbal activity systems, advanced linguistic communication, the ritual coordination of labor, advanced artifact manufacture, the linkage of phenomenally diverse social and nonsocial actors, and the social use of diverse artifacts are all recognized as part of a single complex that is simultaneously adaptive and expressive (1992: 513).

In his genealogy of the concept of "technology" Schatzberg (2006) found that the emerging discipline of anthropology devoted a lot of attention to the study of material culture among "primitive" peoples. From 1882 the prominent "Anthropological Society of Washington", founded in 1879, specified four sections: technology, somatology, ethology, and philology. One of the founders of the society, John Wesley Powell, proclaimed that "the science of the arts is technology", and technology was referred to as a field study within anthropology. But it was not until after 1940 that "technology" took on a significant place in English-language anthropology, and by then it referred to material culture itself, not the study of material culture. As such it had by now acquired the present day common meaning of "technology" as the methods and material equipment of the practical arts (in Part II of the thesis a more in-depth questioning of both its wider and deeper meanings is performed).

In the contemporary focus upon "competence" and "knowledge", and "not in the technology in itself", as one Hydro division President put it, they reach back to areas of concern that earlier laid within the concept of "technology", but which is circumscribed by present usage. In "The Century Dictionary", published in New York in 1911, "technology" was defined as: "… the science or systematic knowledge of the industrial arts and crafts, as in textile manufacture, metallurgy, etc." (quoted in Schatzberg 2006: 490).

In Hydro project work, they are hugely concerned with the skills or arts "surrounding" or enabling technological processes, but since "technology" presently is mostly perceived as the "thing itself", as the object, Hydro often employs phrases like "the technology in itself" ["teknologien i seg selv"], to make it distinct that they are often talking about something more or other. In this way they indirectly reach back to

meanings with affinity to "technik", "technologia" and "tekhne" of earlier days. Drawing on the emerging field of "anthropology of science and technology" (for a short overview see Hess 2008), especially in chapter five and six, notions of nature and culture is questioned. As noted above, in the present work "technology" is perceived, both by collaborators and the author, as both an object of study and a study of the object. And as we will see more clearly in chapter five and six, "object" in these senses includes vast realms of both the natural and cultural landscape.

Anthropology of "global industry"

The contemporary debate in the anthropological study of industry is captured by Rothstein and Blim (1992), in the anthology of "the new industrialization in the late twentieth century". Here is an outline of a research program that in a "globalized" world might supplant industrial sociology. Noticing the historical heir from the early "factory studies", their "anthropology of the global factory" argues that the world has become a "global factory", in the sense that industrial production for the world market has spread to every continent and most regions worldwide. They critically review four neo-Marxist competing conceptions of the contemporary capitalist world economy: world-systems theory; the articulation approach; the dependency and underdevelopment thesis; and the new division of labor hypothesis.

I do not draw extensively on any of these research streams, and will thus not get into them. Rothstein and Blim suggest an alternative based on theoretical discussions and an empirical description of the "global factory", and also discusses anthropology's role in that picture. They arrive at five propositions of the predicament of global capitalist production in the late twentieth century. First they see the global factory as emerging within the context of an expanding and increasingly combined and uneven world capitalist economic growth. Secondly, as I have referred to as the Schumpeter-Chandlerian doctrine, they see manufacturing as the growth engine in contemporary capitalism. Thirdly, production in this economy is increasingly dependant upon

activities of local and regional networks of petty commodity producers. As a fourth proposition, the production process in the world economy is seen as highly networked and flexible, although increasingly based upon a labor process incorporating and exploiting domestic workers. Finally, "… the global factory is shaped in important ways by the actions of and conflicts between a variety of agents – from nation-states and capitalist classes to workers and communities" (ibid.: 19). All of these aspects of the capitalist world economy are relevant, in various degrees, in the present exposition. However, my analysis will be ethnographically based in the actions of managing investment projects, and the five propositions, along with other generative insights, will be enacted appropriately to the empirical material as it is unfolded.

Since before the 1930s anthropology has provided studies linking industrialization, local communities and the wider society (cf. Lynd 1929, 1937; Warner et al. 1947). After World War II several studies noted the importance of local struggles and cultural variations in the industrial development process, and advocating an incorporation of the world economy to understand social change (cf. Nash 1985; Geertz 1963). Research on postwar African industrialization also related macro-social economic processes to local studies (cf. Gluckman 1961). As noted by Rothstein and Blim (op. cit.), by the 1970s studies of industrialization in anthropology had embraced both a world market orientation and that local people's worlds were also shaped by economic processes from "outside", and documented resistance and local variations to these dependencies. By the 1980s, "… the study of anthropology and industry was located decisively within the framework of the world capitalist economy and within the context of an international division of labor" (Rothstein and Blim 1992: 28). Major focus has since been on the linkages between local life and economic macro process.

In complement to these research streams, I have not been concerned with some local, in the geographical sense, community, and its relations to macro processes. Rather I have tried to "enter the engine" of capitalist "value creation" itself, as it were. The local is not taken out of the equation, but recast as a time-space of "investment projects" constituting "global assemblages" that, as noted in the introduction, enables

and organize a connected "glocal" flow of people, money capital, knowledge and technology while tapping inot a variety of localities. In some senses highly structured and closed, yet in other senses fluid, dynamic, open and heterogeneous. I have tried not taking the "capitalist mode of production" for granted, and wanted rather to investigate how it looks inside the "core parts" of the engine, and offer from there an outward looking perspective. As will be shown through the empirical exposition, also at the core of the major engine of capitalist production there are heterodoxies, subversions and alternative trajectories and complexities.

To provide a better understanding of the historical background of the research focus on managing these global industry investment projects, a few more comments on the distinctiveness of the "rise of management" in industrial society is necessary.

Managing as "knowledge work"

The establishment of management as a "discipline" was pivotally enabled by the publication of Peter F. Drucker's 1954 book "The practice of management". Here the rise of management as a distinct and vital group in industrial society is described. Management was portrayed as a *practice*, and although containing elements of both, neither seen as a science nor a profession. The tone is set in the first sentence of the book: "The manager is the dynamic, life-giving element in every business. Without his leadership the "resources of production" remain resources and never become production". Together with arguably the first book talking about a "managerial revolution", "The Modern Corporation and Private Property" (Berle and Means 1932), other classic monographs from managing in work life relationships at the time, like "Men who manage" (Dalton 1959), "Organization Man" (Whyte 1956), "The Nature of Managerial work" (Mintzberg 1973), and "Manufacturing consent" (Burawoy 1979) our understanding of managing in the modern organization or corporation, and of "managing man", was (re)formed.

According to Drucker, probably the single most important contributor in the development and articulation of a systematic "managementality" (Sørhaug 2004), talk

of “capital” and “labor” was exchanged with the conceptions of “management” and “labor”, and the managers three distinctive jobs were to manage a business, manage managers, and to manage workers and work. However, as he stated almost half a century later: “Management is a generic function of all organizations, whatever their specific mission. It is the generic organ of the knowledge society” (Drucker 1994: 43). This phrasing is significant in the approach of the present work. Drucker defines a manager as one who is “responsible for the application and performance of knowledge” (ibid.: 44). It is explicit on linking managing actions and the “performance of knowledge”. The renewed interest in “knowledge” in the economy was made clear by the Journal of management studies devoting a special issue to the subject in 1993[35]. The same year Drucker, described how the emergence of the “post-capitalist society” (1993) began after World War II, and how he coined the terms “knowledge work” and “knowledge worker” around 1960.[36] Concerning the notion of work, although some anthropological efforts have been made (cf. Wallman 1979; Wright 1994; Gellner and Hirsch 2001), and many “occupational ethnographies” exist, an instituted “history of work”, much less of “knowledge work”, has yet to be installed as a comprehensive academic endeavor (Drucker 1994: 34; cf. Thompson and McHugh 1990).

Obviously, knowledge has always been a central feature of most economic activities, the management revolution, however, as explicitly linked to economic modernity, is according to Drucker the third level in a successive movement involving knowledge. The first was the industrial revolution, the mechanization of production by applying knowledge to tools, processes and products; the second was the “productivity revolution”, associated with rise of the modern corporation and fundamental infrastructural inventions at the end of the 19th century. This was knowledge applied to human work, as exemplified by Taylorism. The management revolution then, as the third phase, is knowledge applied to knowledge.

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[35] See Journal of Management Studies, 30(6), 1993.
[36] He seems to be deliberately vague on the exact origins of his own coining of the terms, see Drucker (1993: 6).

> "We know above all that making knowledge productive is a management responsibility. It cannot be discharged by government; but it also cannot be done by market forces. It requires systematic, organized application of knowledge to knowledge… The first rule may well be that knowledge has to aim high to produce knowledge… Knowledge is productive only if it is applied to make a difference" (Drucker 1994: 190).

The authority pattern of "managementality", maintains Sørhaug (2004) accordingly, is the "managing of management", the application of knowledge involved in getting someone to "want to want".

The increasing recognition of the importance of specialized expertise to industrial and the so-called post-industrial society is hardly new. Ideas related to knowledge as resources for social power, and subsequently, for control, has been thoroughly discussed in relation to the emergence of the various organizational and institutional forms we labeled industrialization and modernity (cf. Foucault 1980; Gellner 1964). Numerous scholars have documented the transition in the making in advanced industrial nations from economies based on physical inputs and natural resources to economies based on "intangibles", or intellectual or knowledge resources. Galbraith (1967) proposed that a new class of scientifically based technical experts was emerging, alongside Bell (1973) who, in addition, envisaged a post-industrial society with knowledge as a commodity (Blackler, Reed, and Whitaker 1993). Knowledge as a "strategic resource" seen in relation to companies competitive advantage has also long time since been noted (cf. Prahalad and Hamel 1990; Reich 1991). Significantly, as Jacques documents, there is strong continuity from the earliest to the latest phases of the 20th century in terms of discourses of "management knowledge", for example in terms of "the new worker – 'making capital' from knowledge work" (1996: 2).

In the Hydro managing tradition this can be exemplified by two quotes, the first from 2002, the second from 1968. The President of Hydro Aluminium Metal Products, at the time the most important of the business units in Hydro Aluminium, were present

at the opening ceremony of the Azuqueca plant. Here is the first part of his address to the audience:[37]

> "Felicidades. This is a very important milestone for Hydro Aluminium Metal Products. It is an important step for us to be able to serve our customers in Spain and Portugal, especially, in a better way than before. This plant is an investment for 25 million Euros, and even for Hydro that is a lot of money. We are using state-of-the-art-technology with the most modern equipment in all process steps. However, hardware is only a part of success, because anyone can by the furnaces, the filters, the casting pits, and homogenization equipment. But very few can utilize this in an innovative and profitable way. Behind this is several decades of research and development work in physical metallurgy and process development, and we are very proud to put the most modern competence into this plant. The plant is a result of a shared vision of utilizing the inherent properties of aluminium for an environmental sustainable future. In this plant we are using only five percent of the energy in the production compared to the primary production of aluminium. A high performance remelter requires a motivated, focused and competent team, and I am confident that the Azuqueca team will make this a good investment for Hydro Aluminium Metal Products."

The aspect of his speech of which I want to pay particular attention to, is the emphasis he places upon the concept of "competence" rather than "technology" in a narrow sense of the latter word. The continuity of this theme can be traced, at least back to 1968. Here is what the legendary "General Director" (the CEO) of Hydro at the time, Johan B. Holte, wrote in the internal newsletter:

> "In the realm of industry the last years have exhibited a lot of dramatic changes… A huge wave of knowledge acquisition ["kunnskapstilegnelse"] emerges throughout the entire planet, and provides a new foundation for making use of knowledge ["viten"] and reason ["forstand"] to solve the problems of society ["samfunnsliv"] and production… As never before lies the key to societal progress ["fremgang"], for every industry and for each individual, in the making the right use of people's talents and zeal ["evner og innsatsvilje"; the latter word literally translated as "effort-will"]."[38]

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[37] We taped the speech on video and later used it in the multimedia learning history documenting and describing the project (described in chapters four and six).

[38] From Norsk Hydros newsletter [tidsskrift], Vol. 3, 1968. Quoted in Thorsrud and Emery (1969: 136-137, *my trans*.).

In both quotes, we see the "other canon" exemplary illustrated. In my argument here, then, as we have seen a marked resurgence of issues of the "knowledge society", "knowledge economy", and the "knowledge-based view of the firm" (cf. Grant 1996), and the like in the recent decades, I see it as a sign of a "new coming" for the economic tradition of the "other canon" discussed above. And these discussions on managing and knowledge have developed into an array of different debates in the contemporary, touching on important aspects of industrial and post-industrial developments, for example of technocracy, bureaucracy, (post)-capitalist economy and globalization in many of it's facets. Knowledge and information becomes key symbols of contemporary culture.

A monumental overview of the coming of "the information age", a perspective analyzing the complex relationships between transnational capital, migration, the emergence of pervasive information technologies, political supranationality, identity politics, grassroots movements and the information economy, was compiled by Manuel Castells (2000-2004). His general description of the state of the world condition is unambiguous with respect to the most fundamental question: we are now in the middle of changes just as far-reaching as the industrial revolution, the establishment of liberal democracy and the nation states.

Organizational knowledge and the "knowledge economy"

Documentation of the coming of "knowledge based" production and the realization of the knowledge economy is provided for example by Powell and Snellman who define it as "… production and services based on knowledge-intensive activities that contribute to an accelerated pace of technical and scientific advance, as well as rapid obsolesce" (2004: 199). The transition is documented using patent data "… that show marked growth in the stocks of knowledge, and show that this expansion is tied to the development of new industries, such as information and computer technology and biotechnology" (op. cit.: 215). Another recent, and controversial, contribution is "The

rise of the creative class (Florida 2002), who measure indicators of talent, technology and tolerance[39] to conclude that human creativity rather than natural resources and physical inputs is the key component in the knowledge intensive businesses; the latter which by now he argues comprises about thirty percent of the workforce in many western countries. And it is happening in cities.

As indicated above, a particularly vigorous academic debate has ensued in recent years within organization studies on aspects of knowledge and learning as some form of valuable and strategic resource in various organizational, mostly corporate, contexts. A multitude of more or less intertwined research threads have focused on concepts like "organizational learning" (cf. Argyris and Schön 1996), "the learning organization" (cf. Senge 1990), on "organizational knowledge" (cf. Tsoukas 2001), "managing knowledge" and "knowledge sharing" (cf. Krogh and Roos 1996), "knowledge management" (cf. Desouza 2005), and "knowledge creation" (cf. Nonaka and Takeuchi 1995). A brief overview of anthropology's positioning and possible contributions to the field of "organizations learning" is found in Czarniawska (2001).

Although massive efforts in the overall landscape of studies of "knowledge, management and organization" are of normative and positivist flavor, enmeshed in a neo-realist epistemology of maximizing the efficiency of knowledge and designed to instigate instrumental changes (not including those above); a substantive corpus of work in an interpretative, social constructivist and practice-based paradigm has also surfaced, like the ethnography of knowledge processes as situated in work actions (Suchman 1987), and in popular conceptualizations like "communities of practice" coined by anthropologists Lave and Wenger (1991). The ideas of "knowing in practice" (cf. Orlikowski 2002), is in these debates a key perspective, and similarly seeing organizational knowledge as narrative, ambiguous, emergent and distributed (cf.

[39] Talent is measured through the percentage of "creative persons" as well as scientists in the workforce and a measure of formal education. Technology indicators are R&D percentege of GDP, portion of patent applications, and high-tech patents per million inhabitants.

Alvesson 1993, 2001; Tsoukas 1996). In these narrative approaches ethnographic studies have also been pursued (cf. Orr 1990, 1996).

As will be discussed in chapter four, the narrative and practice turns (Schatzki, Cetina, and Savigny 2001) in the social sciences are in these debates often intimately interlinked (cf. Carlsen, Klev and von Krogh 2004). For two comprehensive overviews of these research streams, see Dierkes et al. (2001) and Easterby-Smith and Lyles (2003). In many of these efforts a strong focus has been put on classifying various types of knowledge as found in organizational settings. While presenting an overview of the field of knowledge work in organizations, Blackler (1995), for example, links different types of organizations to a typology classifying forms of knowledge as "encoded", "embrained", "embedded" and "encultured". The distinction between tacit and explicit knowledge (cf. Polanyi 1966), is a recurring issue, and seen as corresponding roughly with the conceptions of procedural "knowing how" and declarative "knowing that" in discussions of "the art of knowing" in organizations (cf. Duguid 2005).

I will draw eclectically on insights from these debates in the present work. The above contributions are mostly, however, constrained by the formal organization boundaries as the unit of analysis, and seldom make their studies relevant for wider relationships and transformations in economic, social and cultural formations. Although formal organizations indeed are important and fruitful empirical arenas, this analytical constraint may reduce these studies explanatory power and relevance. In my approach I seek to explain the reproduction of relations on successive levels and along differential dimensions, from managing actions in investment projects, to the relevant corporate context, but also transcending "the organization" and further investigating the globalized capitalist economy and some of its significant corollaries in the contemporary.

Knowledge and changing configurations of value

On the more general level, Drucker's main analysis of management and the knowledge society, highly influential, most severely debated, criticized but most of all praised, explains how we are "… moving from a society based on capital, land, and labor to a society whose primary source is knowledge and whose key structure is the organization" (1993: back cover). In this new society, which Drucker claimed was already there, he declares quite sensationalist that the basic economic resource is no longer capital, nor natural resources, nor labor; "*It is and will be knowledge*" (op. cit.: 8). An illustrative summary of his perspective on knowledge work is the following:

> "The central wealth-creating activities will be neither the allocation of capital to productive uses, nor "labor" – the two poles of nineteenth- and twentieth-century economic theory, whether classical, Marxist, Keynesian, or neo-classical. Value is now created by "productivity" and "innovation", both applications of knowledge to work. The leading social groups of the knowledge society will be "knowledge workers" – knowledge executives who know how to allocate knowledge to productive use, just as the capitalists knew how to allocate capital to productive use; knowledge professionals; knowledge employees. Practically all these knowledge people will be employed in organizations. Yet, unlike the employees under Capitalism, they will own both the "means of production" and the "tools of production" – the former through their pension funds, which are rapidly emerging in all the developed countries as the only real owners; the latter because knowledge workers own their knowledge and can take it with them wherever they go. The *economic* challenge of the post-capitalist society will therefore be the productivity of knowledge work and the knowledge worker. The *social* challenge of the post-capitalist society will, however, be the dignity of the second class in the post-capitalist society: the service workers. Service workers, as a rule, lack the necessary education to be knowledge workers. And in every country, even the most highly advanced one, they will constitute a majority" (ibid.).

A number of issues, questions and contentions may be inferred, and indeed have been discussed from Drucker's and other propositions in a similar vein. For example it might be argued that in Marx' sense there is nothing non- or post-capitalist about knowledge

workers themselves possessing their most important means and tools of production.[40] A key debate has been whether the recent technological advances, most notably in information and computing technology, actually has raised productivity. To shortcut the discussion, Powell and Snellman (2004) provide an overview and a conclusion of the debate. "… significant gains in productivity are achieved only when new technologies are married to complimentary organizational practices" (op. cit.: 215). They provide quantitative support to insights gained through qualitative research on technology transfer (cf. Levin 1997), that show how technology transfers and organizational development and redesign must be reciprocally constituted and concerted if viable use of new technology is going to be successfully accomplished. Likewise, Powell and Snellman (op. cit.) review the literature on whether new forms of work that embody technological change offer increased worker autonomy or greater managerial control. They support Zuboff's (1988) classic study of introductions of new information technologies, and show that they offer possibilities for both discretion and control.

Another issue to reflect upon from Drucker and his "followers" is the nature of the knowledge resource, as compared to money capital, labor and natural resources, especially in connection to competitive advantage. An anthropological perspective (cf. Sørhaug 1996) would not necessarily acknowledge the conventional wisdom of the knowledge work debates, also conveyed in the Drucker quote, that knowledge workers own their knowledge and can take it with them wherever they go. An equally, and arguably "anthropologically" more attractive perspective, also more in line with many of the social constructionist perspectives outlined above, would be to see knowledge as "socially" produced in terms of both political economy and "cultural economics", and as intimately related to communication. To perceive knowledge as processes, attributes and instantiations of social groupings communicative interaction. That knowledge flows within and between people and different social and organizational arrangements. From

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[40] A debate too complex to get into at this juncture, but arguably what is at stake in Marx theory of capital is the transpersonal and transcultural "objective forms of thought" that constitute capital. As such the specific distribution and manifestations of these forms among individuals and types of property become secondary (Stein E. Johansen, personal communication).

such a perspective, to create value knowledge needs to be communicated. This implies an inherent vulnerability in knowledge intensive modes of production, because trust is an underlying premise for the sharing of knowledge. Thus, because knowledge is social in nature, as a value creating capacity – a "resource" – it offers considerable resistance against being *owned*. Even by yourself.

A further theme discussed by numerous scholars and which also is present in the Drucker quote above relates to growing inequality on wages and high quality jobs. Often referred to as the skills mismatch thesis, implying that huge numbers of workers are "left behind" the rapid technological changes. Literature suggest that a simple endorsement of such notions are premature, but nevertheless indicate that "… older, less-skilled and minority workers have borne the brunt of the transition to an economy based on intellectual skills" (Powell and Snellman 2004: 215). Further studies are required, and some experiments show that measures work, like the Norwegian program for increasing trade union knowledge about technology,[41] with the consequent result of increased union bargaining power (Mumford 1997).

Summarizing key aspects of the "information age" and answering substantial critics, Castells distances himself from two aspects of what he calls the information economy. While it is advisable to beari in mind several possibly important distinctions between the concepts of information and knowledge, Castells argues that it not correct that information (or knowledge) has become and important factor of the economy only in recent years. Information has been an important input factor since the Stone Age, since humans started making tools out of stones. Secondly, the concept does not imply that the economy first and foremost produces information. In the US about 45 percent of the wealth creation is still tied to traditional industry. However, it is getting more and more difficult to draw a clear demarcation line between products and services, and the information and communication technology is now an integrated and requisite part of

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[41] A program led by a group at the Norwegian Computing Centre headed by Christen Nygaard. It was following the globally pioneering and extensive humanization of work program launched in Norway 1962, "The Norwegian Industrial Democracy Program", led by a group of researchers headed by Einar Thorsrud and assisted by Fred Emery then at the Tavistock Institute of Human Relations. See above.

the production in all sectors. According to Castells comprises information an increasing part of both the raw materials and the product, both input and output. In their arguments for the emergence of a postmodern "sociology of immaterial labor", Negri and Hardt argue that: "… instrumental action and communicative action have become intimately interwoven in the informationalized industrial process" (2000: 290). They hastily add that this is an impoverished notion of communication. In their view, immaterial labor produces an immaterial good, "… such as a service, a cultural product, knowledge, or communication" (ibid.).

Moreover, the global economy is developing radically in the direction of dematerialization, the weightless. The exported goods in most demand in the US lost 50 percent of their physical weight per dollar worth in six years (Coyle 1999). Castells (op. cit.) provides a convenient list of "new" things shaping the "new" knowledge economy: microchips and computers; omnipresent mobile telecommunications; gene manipulation; electronically integrated global finance markets operating in real time; an interwoven capitalist based economy reaching the whole planet; that most of the urban workforce in the most advanced economies work with information and knowledge processing; that over half of the earths population live in cities; the fall of the Soviet Union, communism and the end of the cold war; the emergence of the Asian pacific region as an equal participant in the global economy; the widespread opposition against patriarchy; the emergence of a universal awareness about ecological preservation.

With respect to economic ontology, Sørhaug notices in these developments a shift or a drift (2004: 278). The constitution of what economic objects "are" has changed. His argument is that the dominating capital objects now are abstract. He tries to capture the shift through the metaphorical contrast between a machine and the *invention* of the machine. A similar contrast is found in the relationship of the product and the *concept* of the product. The invention and the concept are moving to center stage, and can be perceived as the presence of a relation. As project work in Hydro to large extent is "concept work", in chapter six some of these ontological considerations will be elaborated upon. As the "other canon" has showed us, some of these insights has

been in circulation at least since the Renaissance, but possibly is there something particular in the contemporary relationship between the abstract and physical objects.

As will be showed in chapters seven and eight, we are seeing a move from "productive value creation" to expectation based "value appreciation". In the anticipatory game of value appreciation, the machine and the product, and the knowledge about the machine and the product we might add, are only indirectly value creating. The ontological realm of the physical object is, as Sørhaug notes, primarily an excuse for value appreciation, which is in a sense the value creation of the abstract objects (ibid.). We have seen the same dynamics also in earlier historical periods of capitalism, when "high finance" has dominated completely, moved from symbiosis to parasitism in its relationship to productive capital (cf. Arrighi 1994; Appendix II). Nevertheless, there seems to be certain specialties in the contemporary constitution of the relation, because of the necessity to differentiate between qualitatively different types of both physical and abstract objects. The relationship constituted in the contemporary "financialized" economy of abstract value appreciation, has reached a stage of appreciating expectation values *between* abstract objects, evolving beyond the relations with the physical objects.

Still, however, if applying a "knowledge theory of the firm" perspective, the importance of production is *not lost*, being still "… the most important and complex means of value creation" (Grant 1996: 111). As I have argued, the knowledge perspective is a resurgence of the "Renaissance economics" of the "forgotton tradition" of the "other canon". As we will see especially in chapter eight, in the financialized economy creation of anticipations of value seems to have become the dominant form of production.

Why an anthropology of managing?

While Drucker expressed ample reasons of studying management thoroughly half a century ago, there is still no tradition of anthropological management research. Drucker wrote:

> "The emergence of management as an essential, a distinct and a leading institution is a pivotal event in social history. Rarely, if ever, has a new basic institution, a new leading group, emerged as fast as has management since the turn of the century. Rarely in human history has a new institution proven indispensable so quickly; and even less often has a new institution arrived with so little opposition, so little disturbance, so little controversy" (1955: 3).

In Shenhav's unearthing of the inception of management to the American discourse among engineers in the US in the years 1880-1932, the latter year when Berle and Means announced the "managerial revolution" in their book "The Modern corporation and Private property", Shenhav exposes the "process by which managerial rationality crystallized to become the unquestioned pacemaker of the modern social order", while playing a critical role in "diffusing repertoires of instrumental rationality worldwide" (1999: 2). Managing actions thus provide an opportunity to study modernization and rationality in the contemporary as well. And as I have shown above, while quite a substantive body of ethnographies focusing on formal organizations and corporations and their activities exist, Watson (1994) is to my knowledge virtually the only ethnography specifically focusing on corporate management. Although anthropological efforts of discussing managing for example in relation to "meaning" (Gowler and Legge 1983) and "magic" (Cleverley 1971) have ensued, Linstead notes: "There is no extensive tradition of sociological participant observation in *management* research" (1997: 96).

Moreover, to my knowledge there is not a single ethnography focusing on either globalized aspects of corporate management practices or managing as knowledge work. Not the least the combination. Sørhaug's brilliant account of managing in the knowledge economy is an anthropology of ideas (op. cit.). The ethnographically based

collection of essays in Dubinskas (1988) touches upon issues of managing by way of studying technologically advanced organizations, but only marginally and the focus is on time or temporality in organizing. There are thus ample reasons for ethnographically based anthropological contributions to the study of managing in the globalized "knowledge economy". As such it is also a contribution to an anthropology of contemporary *expert* and professional *elites*, a study which is, according to Holmes and Marcus long-deferred, awaited and "by this time is belated" (2005: 248; see chapter three for discussions).

Arriving from the establishment of the contemporary discourse on the globalized knowledge economy and managing as "knowledge work", we might turn back to a notion of managing as contextually situated communicative action. As with notions of rationality, in the present work concepts like "managing", "knowledge", "competence", "technology" and "knowledge work" is a subject of exploration rather than given assumptions. For an ethnographically based anthropology of the issues raised in the foregoing, they must be turned into a subject of investigation. Thus to be able to explore the issues, an analytical strategy must be devised. It is to the task of establishing a framework to guide us in that pursuit we now turn. The section below provides a transition to the following two chapters that in various ways examines issues of methodology, ethnography and anthropology, in the context of modern corporate managing. An anthropology of globalized knowledge work in the contemporary might arguably thus be perceived, in one important sense, as an approach, or procedure, enabling a particular investigation of these subjects.

Research design and analytical strategy: Anthropological discovering

As described earlier, the empirical analysis in my project focuses first and foremost on the communicative interaction, or discursive action, among various types of managers in or related to conducting investment projects, constituted as "global assemblages", in

the "world-wide" Hydro organization. It is important to stress that in this context verbal communication, speech, is a form of action (cf. Hall 1972; Ivie 2002). This position is especially warranted in an analysis of managing actions, because a fundamental type of communicative practices in these domains are some way or another related to making decisions. Decision making communicative practices are primary examples of what Searle terms "speech acts" (1969), and Austin discusses in his work "How to do things with words"; the performative character of utterances. The analysis is not, however, an example of what has been labeled the "ethnographic analysis of accounts" (cf. Shulman 2000). I do not use individual accounts in an extensive analysis of discourse, but rather use them in the sense of a narrative based, engaging "para-ethnography" (see chapter three and four), to challenge "official" accounts made in the company by "native points of view", as they are illustrated in communicative practices of expert members themselves (see chapter three for a discussion of practice-based narrative knowledge).

To frame a specific anthropological approach to studying managing knowledge and actions in the present setting, we need to pick up on the earlier debate about knowledge. There has indeed been a lively epistemological discussion in anthropology as well. The discussion about "the nature of knowledge" in the social constructivist and interpretative mode in organization theory has been, but to a limited extent, in dialog with the anthropological turn from "culture to knowledge" as a key analytical concept; in the wake of the extensive self-critical debate concerning the concept of culture (cf. Brightman 1995). Some of the main problems have been associated with explaining, like Quinn and Strauss notes, how culture is "… partially shared and partially diverse, partially contested and partially accepted, partially changing and partially permanent" (quoted in D'Andrade 1995: 147).

In these debates, the concept of "experience" has been central. How culture is learned through experience. An interesting example of this, which contrast many of the individualistically based organization studies approaches to the "challenges of knowledge sharing", is Borofsky's tenet that:

> "Instead of emphasizing that people need to share certain knowledge in order to efficiently interact, I would suggest that people share certain knowledge *because* they have learned how to interact with one another. What people share culturally is the experience of getting along with one another, of participating in meaningful activities together" (1994b: 338).

The interrelationships and shifts from "culture to knowledge" are vividly captured in many of the contributions to "Assessing cultural anthropology" (Borofsky 1994a). Barth argues for example that: "Our analysis will benefit if we privilege the interface where meaning and natural law articulate, i.e. the study of human traditions of knowledge" (1994: 351). Hearkening back to his earlier work (1975), Barth launches a program for "an anthropology of knowledge", focusing on a framework for studying the transmission of knowledge and its trajectories of change (2002). Borofsky writes about the "knowledge and knowing of cultural activities", differentiating "knowledge" from "knowing" on a continuum from more context-free, rigid and definitive forms to more flexible, changeable and situated forms, each are again linked with implicit and explicit memory (1994b).

Key concerns in these discussions are the language versus non-language basis for concept formation and knowledge, exemplified by Blochs argument that most forms of human knowledge are acquired and sustained through cognitive processes that are not even "language-like", nor expressed through language (1991). Emphasis is placed on situatedness, the implicit, tacit, local, embodied and particular entangled interactions; illustrated by Barth's statement that "… all concepts are embedded in practice" (1994: 356). He quotes Clifford Geertz, as always eloquent when saying that: "… to an ethnographer, sorting through the machinery of distant ideas, the shapes of knowledge are always ineluctably local, indivisible from their instruments and encasements" (Geertz 1983: 4, quoted in Barth 2002: 2). Barth's proposition, however, is that Geertz here exemplify the typical "cultural perspective", and Barth argues that moving from a "cultural" to a "knowledge" perspective enables a form of break with this cultural framing to: "… perform the mental, analytical operation of dividing the shapes,

instruments and encasements from each other, the better to analyse the internal processes of differentially constituted traditions of knowledge" (ibid.: 3).

While keeping both Geertz' and Barth's perspectives in mind, that is, maintaining both a wholistic and integrating ontology in view, while operationalizing the field by dividing it, I adopt a modified version of the Barthian framework for an "anthropology of knowledge" (2002) as the *analytical* strategy of the present study. Schematically this framework can be outlined as in figure five.

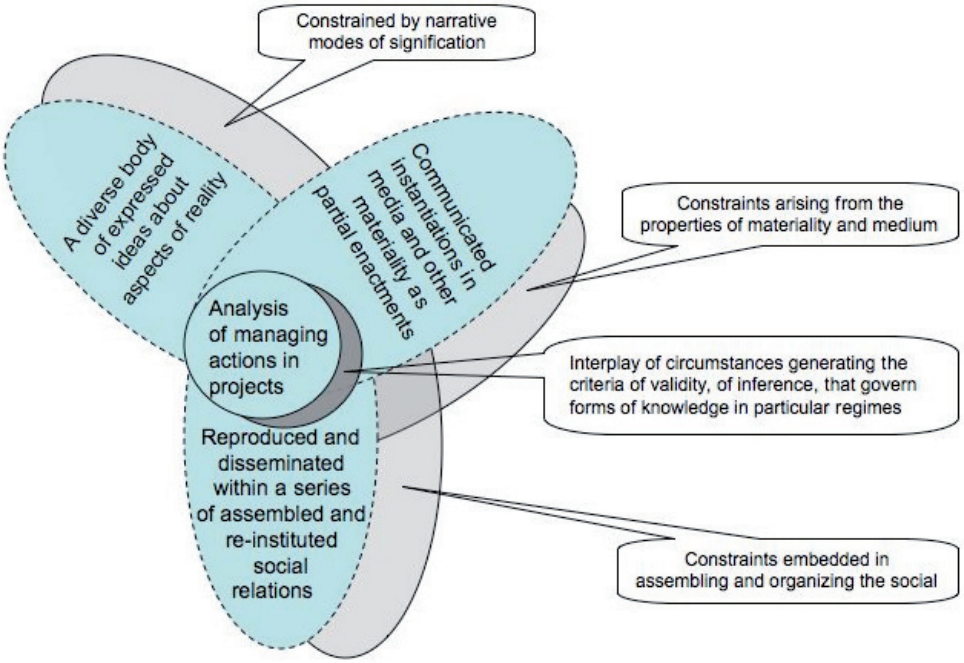

Figure 5. Analytical strategy of the present study, framed through "the anthropology of knowledge".

As outlined in the figure, while focusing on the managing actions in investment projects, a set of connections can be traced. This reassembling links a corpus of expressed ideas about aspects of the "relevant" reality; how these ideas are instantiated

as communication through various forms of media and other materiality, as both multiple and heterogenizing enactments and homogenizing encasements; and simultaneously how these communicative interactions are reproduced and disseminated within a dynamic formal and informal web of re-instituting social relations.

The framework figure also reveals that each of the main analytical elements is constrained by respectively: narrative modes of signification (the narrative forms and styles, rhetoric, tropes and figures employed by people in communication); properties of media and materiality, and constraints embedded in assembling and organizing the social in this particular field. Some of these constraints involves issues concerning for example conventions of knowledge representations, the distribution of who knows what, networks of relations of trust and identification, and patterns of authority and positions of power and disempowerment. As will be conveyed, the constraints upon project and corporate work as analyzed here, is also to a large extent constituted from "outside" and "above" this specific corporation, most notably from what is broadly labeled the capitalist finance community and its corollaries in terms of the financialization of global economic and cultural relations.

If successfully employed, this analytical framework will accordingly enable the study to analyze trajectories of a changing corpus of knowledge, as related to managing in the investigated investment projects and the wider constraints in which they are embedded. It will do so, as illustrated in the figure, by observing the complex circumstances that generate the main criteria of validity; which in turn brings forth and governs particular knowledge traditions and regimes. Identifying the potentials and constraints of these criteria of validity and feasibility provide for the production and transmission of knowledge, situates the tradition as distinct in its constitutive relations to wider economic, social, cultural and natural surroundings. As will be argued, these wider circumstances are inescapably entangled with the knowledge tradition under scrutiny here, in a radically naturalist ontology of "mono-plurality" or "differential entanglement" (see especially chapter five, six and ten). The anthropological quest, as

outlined in chapters two and three, will be driven by a methodological mode of *para-ethnographic*, *narrative* oriented *abductive* discovering.

The subject matter of this thesis might not at a first glance seem to conform neither to the procedural nor to topical ideals of a "fetishised" version of the "received" anthropological tradition (see chapter three). Nevertheless, as discussed above, anthropology has studied many of the key threads and major analytical concepts that lead up to the focus of the thesis; and the broad themes elaborated upon touches many of the perennial deep issues of social and cultural anthropology. Examples are relationships between structure and agency, the local and the global, about forms of rationality, about continuity and change, and person and institution.

Many of these continuing concerns are touched upon in the present work, however, as an organizing principle I have chosen to convey the content of the thesis as a series of inter-related relationships of another of anthropology's perpetual themes – that of part to whole. From the vantage point of in-depth scrutiny of managing actions in a group of investment projects in Hydro a series of part-whole relationships will be unfolded as multidimensional circles on the water. These relationships relates to various aspects and dimensions of the total reality that makes up the "professional life of projects". Without folly ambitions of covering the total space of this reality, I nevertheless intend to describe and analyze some of the most basic fundamentals and dimensions of it.

As outlined in the introduction, the research focus in the present study is related to investigating *managing practices* in a set of new international *investment projects* in Hydro. The research challenge has been to understand Hydro's managing practices (as exemplary of knowledge work), particularly related to their international investment projects. The managing and the investment projects in question cuts across different cultural boundaries (national, organizational, epistemic), and the research task has been in the first instance to identify characteristics of these practices and the project's and corporate contexts within which they occur. In the second instance the research task has thus been to situate these managing practices and their project and corporate contexts in

the wider network of globalized capitalist relations. This approach has enabled more generally to give a close-up view of industrial corporate endevours in a globalized economy, and analyze holistically aspects of economic and cultural development in contemporary late-modern society.

Also noted earlier, the problem space of the thesis has been broken down and organized around three main research pillars, each indicated by a key construct and each thematically organized as the three main "substantial" parts of the thesis: Technology (PART II), Economy (Part III), and Signification (Part IV). Rember that all of the three parts are inspired by both *political economy* and *cultural economics* perspectives, but coarsely speaking one might argue that while Part II draws heavily on both, Part III is more inspired by the former, while Part IV draws more extensively on the latter. Overly static and schematically, key constructs of the three pillars might be represented as in is figure six below. The dimensionality of the proposed outline is difficult to communicate in a figure, but an indication can be found in the breakdown of three (differentially integrated) dimensions that capture increasingly widening circles of reproduction of relations.

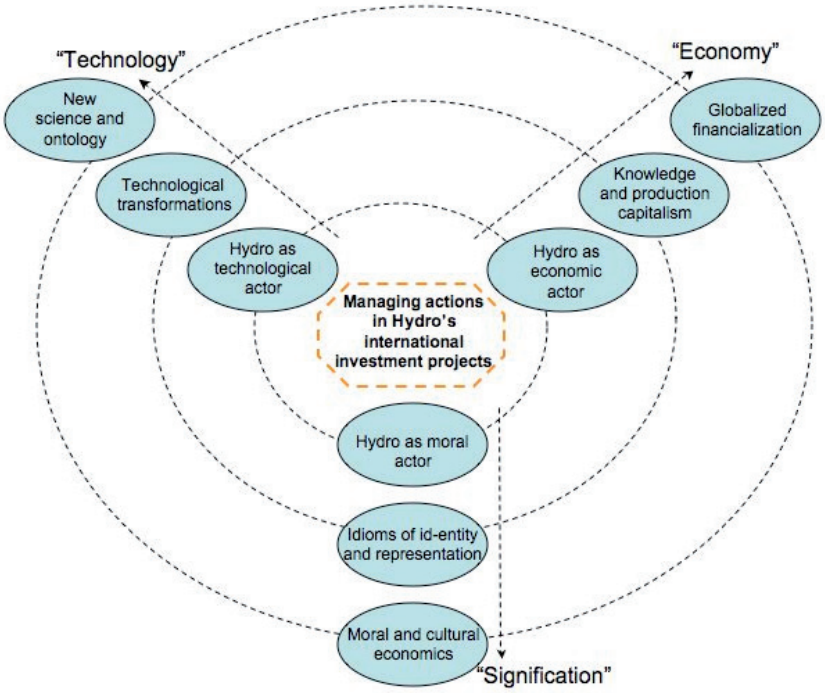

Figure 6. Broad breakdown of the major dimensions of the study's problem space. Major research themes indicated (see also table 2 below).

Working our way from the "inside out", with the study's point of departure in the ethnography of managing actions in a set of Hydro's international investment projects (IIP's) at the center, I will briefly through a set of key words outline each of the major three dimension of the problem space. The "circles on the water" indicates as noted earlier the interdependence and movement in the analysis between what is commonly referred to as the "micro, meso and macro" levels. In my analysis, although as noted earlier rejecting the notion of the independence and distinctness of these levels and depicting the particular managerial communicative interactions of the Hydro projects investigated as "global assemblages", they may also in a "translated sense" correspond roughly to the "micro" level; while the Hydro corporate and the nation state level

corresponds roughly to the "meso" level, and globalized economic relations and capitalism as "world system" is considered at the macro level.

At the center of the figure is of course IIP's seen as brought forth by practices done by specific "professional persons" enacting their managing concepts and models. The premises for this managing is linked with the revolutions enabled by the establishment of the social organization known as "the corporation" and the emergence of the "managerial class, "new" management elites and expert cultures. Managing is depicted as "knowledge work" *par excellence*. At the center, a guiding research question has been the following: If managing as an universal anthropological constant might be considered as embodied or personified incarnations of organizational processes (cf. Sørhaug 2004), what kind of incarnations and processes are most relevant and significant in the Hydro managing context? At the most general level I argue that Hydro practices constitute "Appollonian incarnations", in a form that also struggles with and internalizes Dionysian elements. As concluded in chapter eleven, in the present predicament of economic globalization and financialization, the Appollonians (or the "right kind" of Dionysians) are under severe constraints and at the "loosing end" of a tide that might possibly collapse the capitalist system of accumulation itself.

The first main research pillar is organized around the notion of "technology".

1. [Technology, Part II] IIP's seen as a vehicle to create, disseminate and transform ideas about and materializations of technology. These are expressions about the whole realm of the "industrial arts", the creational forces of "useful values", brought forth through Hydro's conceptualizations of managing as knowledge-based creational engineering. While situating Hydro in the modern industrial techno-science paradigm, it also reaches historically back through "the other canon" all the way to antiquity ideas of forms of rationality, which prompts questions of reformulations of the differentiations of the value spheres and issues of technology seen as instrumental rationality and casuality. It further question Hydro as a cultural actor in their "technological" interpretations and mastery of both nature and culture, and thus the instrumentalization of culture through the managing of these "technologized" relations cross-culturally. In

this questioning through technology and in interpreting experiences of the Hydro members culture/nature interfaces, insights from the new physics (quantum mechanics) of entanglement and undividedness, and the possible new ontologies that might be inferred thereof, is invoked and multiple images of man are discussed.

The second main pillar is organized around notions of "economy".

2. [Economy, Part III] IIP's seen as a vehicle to promote practices and ideas reproducing the economy. Manager engineer's and economist's actions and ideas about the sources and creation of wealth (i.e. notions about qualitatively different types of economic activities), about Hydro's major economic models, about Hydro as an economic and societal actor. An industrial capitalist type of economic actor that highlights their ambiguous positioning as exemplary "knowledge and production capitalists" in a globalized economic system defined largely by finance capital. The latter is characterized as a global culture-complex of "neoliberal financialization". The ambiguities embedded in Hydro projects and the corporation by these powerful constraints illustrates and highlights the widest inter- and transnational economic relationships of contemporary capitalism.

The third and final pillar is organized around the construct of "signification".

3. [Signification, Part IV] IIP's seen as legitimating Hydro as a moral societal and cultural actor. This is invoked through seeing IIP's as the main justification of Hydro as a knowledge and production based capitalist corporation, depicted as instantiations of the "other canon tradition" of "creational" capitalist wealth creation. This can be found in Hydro idioms of "corporate communications", in "managing meaning", "managing culture" cross-culturally, and thus in managing their corporate identity construction. This again might be seen as a form of impression management through for example practices of so-called "branding". Through these intentional and "mass communication" corporate efforts, directed both at internal and external audiences, interpretations and symbolism of projects and Hydro as a moral and cultural actor unfolds. In these Hydro idioms it is found validity claims based on all three of the value spheres, and thus also here questioning of contemporary conceptualizations of

forms of rationality is performed. In the midst of “oikos”, the cognitive-instrumental value domain, there seems rather to be a strong presence of “mixed regimes of rationality”, again opening up for reflections of complex conceptions of human nature in the contemporary. It will expand the images of man (i.e “economic man”) to include notions of both homo faber and homo ludens.

While this outline with the three main pillars is overly static, all three of the major themes are amply discussed within each of the others (as indicated by the circles connecting the three dimensions), it breaks down the problem space in the key organizing dimensions while it nevertheless signifies the wholistic approach advocated here. In so doing it also transcends common perceptions of “micro and macro” levels of analysis, and investigate recursive orders or relations of reproduction. A somewhat more detailed picture of the research design is given in table 2, which highlights the main research themes, the main bodies of ethnographic data, as well as historical and statistical data, and linked with major theories invoked and discussed.

	Research themes	Main corpus of ethnographic data	Historical and statistical data	Main bodies of theory	Thematic organizing pillar
Research focus: Managing in IIP's	•Managing projects as technological practices of dissemination and transformation •Technology of production and enchantment (projects as "industrial arts") •Technology as instrumental rationality and causality (culture as instrument) •Technology as ontology (enfolded potential and entanglement)	•(A) Participant and non-participant observation of managing actions in relation to the IIP's studied (see figure 7) •(B) Document studies of the above projects (e.g. minutes of meetings, experience reports, e-mails and a managers diary) (see table 3) •(C) Interviews with managers and other IIP relevant people	•Hydro history •Technology history	•Anthropology of technology •Science and technology studies •Philosophy of technology •New science and ontology (quantum physics and the new epistemology of entanglement and undividedness)	"Technology" (PART II)
	•Managing projects as economic and societal "value creation" •Projects and Hydro activities as knowledge and production capitalism •Projects and Hydro activities as constrained by "globalized financialization"	•A, B, C (see above) •The Norwegian public debate on the Hydro stock options case •Managing project and corporate financial risk: discussions and annual reporting	•Hydro and Norwegian history •Hydro finance figures •Historical capitalism •Globalized finance capitalisms data •Global economic inequalities data	•Economic anthropology •Critical political economy •"The Other Canon" economics	"Economy" (PART III)
	•Projects and corporate communications as "managing meaning and identity" •Technology of enchantment (rhetoric of representation) •Idioms of "managing culture" cross-culturally	•A, B, C (see above) •Corporate communications material •The Hydro Way program (and branding) •Projects' physical environment (buildings, bodies, machines)	•Hydro history •Moral legitimation of capitalism historically	•Symbolic anthropology •Moral and cultural economics •Analysis of material culture (material metaphors)	"Signification" (PART IV)

Table 2. Outline of the research design, emphasizing the research focus on managing actions in a set of Hydro's international investement projects (IIP's).

A more detailed list of specific types of ethnographic data utilized is given in chapter three. That list serves also as a catalogue of the ethnographica of the present study, and excludes some other major data of historical and statistical types as given in table 2.

While I deliberated in the foregoing sections on some of the important categories and concepts of the analysis, which is pursued in the present thesis, I want in conclusion of this chapter to briefly elaborate on a caveat. Like the self-reflexive debate on the concept of culture in anthropology, it is of importance not to reify other abstractions, such as "knowledge" and "practice". "Where is this 'culture' you talk about doing this and that?" asked Kluckhohn and Kelly already in the 1940s (1945:81). From the same period, Radcliffe-Brown discarded culture as "a fantastic reification of abstractions," in favor of "actually occuring social relations" (1940: 10). A similar musicality needs to be applied to the concept of the "social", and of social relations, as

outlined for example by Latour (2005). As the concepts of "knowledge" and "practice" have attainted considerable popularity within organization and management studies in recent decades, the lure of "fantastic reifications" increases. They might come to mean both everything and nothing, and might as such be emptied of explanatory power.

On this note, I have actively tried avoiding employing too much of predefined concepts in the research discovering process. Some of these concepts, however, enter the empirical descriptions as "native concepts", and it has been challenging to discern the "emic" conceptual use from the analytical category. I hope it is relatively clear in which way terms are used throughout the text, and I am not here signaling any general aversion against abstractions and generalizations. As discussed more thoroughly in chapter three, the widespread conflation between anthropology and ethnography seems to have led to some unfortunate disinclination towards abstractions and generalizable conceptualizations in anthropology. Thus, to some extent several of the concepts employed must analytically be considered as heuristic devices. On the other hand, I adhere strongly to the research ideal advocated by Bateson (1973), of trying to fit "fundamentals" to raw data as tightly as possible, and to a large extent discard the heuristic "middle ground". In the concluding part of chapters six and seven and also in the final chapter, based in the empirical descriptions and philosophical investigations, I seek to unravel more explicitly the semantic and ontological reality of the descriptions, and link it to movements and transformations in the contents and relationships between the analytical categories employed.

Chapter Three

3. Troops, Tropes and Troubles: Rendering Managing a Privileged Ethnographic Object

A greater rigor of preparation, and a more thorough self-examination, will be required for organizational ethnographers if they are to approach the corporate and institutional worlds not as tourists or apologists but as interlocutors in a larger, shared drama of civilization.
(Allen W. Batteau 2000: 737)

But fools with tools are still fools…
(Norman O. Brown 1991: 4)

By way of disclosing the main methodological issues pertaining to the present study, this chapter reflects upon some particular characteristics and ambivalences of the type of fieldwork and the object(s) of study pursued. Some of these issues have general interest in anthropology, especially because aspects of it relates to how the chosen study not easily lends itself to the "received" images of neither ethnography nor anthropology. I argue that if the type of field I am investigating is to be rendered a privileged ethnographic object the enterprise of ethnography itself needs to be re-thought and re-cast in another, and more contemporary image reflecting the present condition of a "globalized" economy.

Pondering my own feelings of methodological discontent about a year after receiving my PhD grant for studies in organizational anthropology, I was somewhat baffled by my indecisive uneasiness. Working in a research institute and having done contract based research in collaboration with the same company I had chosen as the primary case for my PhD for nearly four years prior to receiving the PhD grant, nearly all foreseeable difficulties related to fieldwork, such as status and access to people and materials, were already taken care of. By all manifest criteria the project was running without any serious hitches. Was there nevertheless something wrong with the project I could not fathom? Was I being insecure or delusional? Were there some secret teachings or sacred procedural rules disclosed in ethnographical fieldwork that I had not reflected upon and conceptualized, but which still tormented me subconsciously? Slowly dawning on me, I gradually realized I was up against the "specters of anthropology". Could my activities during fieldwork really be recognized as "true" ethnography, and thus leading up to a proper anthropological thesis? These questions literally forced me into these reflections. If the ghost was located only in the ramblings of my own subjective imagination or if it was pervasively haunting larger parts of the anthropological communities was of lesser importance at this juncture. Either way, to get on, the ghost had to be exorcised.

In an effort of experimenting somewhat with narrative styles, the chapter adopts in the form of a *confessional tale* (Van Maanen 1988) my fieldwork activities as a point

of departure, to launch a broader discussion about doing ethnographic fieldwork in an organizational "culture of expertise" and "elite" context, such as among managers in a "global" corporation. At the same time I am using the opportunity to reflect upon and critique some fundamental aspects of a version of the received traditions of ethnography and/or anthropology. Finally, I outline some premises that form the present ambiguous constitution of organizational ethnography, and points to some possibilities of remedy.

From "enfants terribles" to management elites

Shortly after completing my master thesis on ethnic stereotypes, with material conducted from fieldwork among the Roma in an urban gypsy residential district in Sliven, the "gypsy capitol" of Bulgaria, as noted earlier I started to work as a researcher in Sintef, the largest independent research organization in Scandinavia. I joined a newly formed department designed to come to terms with the knowledge economy, focusing on knowledge management and organizational learning (cf. Dierkes et al. 2001; Easterby-Smith and Lyles 2003;), and at that point, especially targeting the increasingly significant sector of professional service firms, or knowledge intensive business services (KIBS) (cf. Carlsen et al. 2004). In a thoroughly cross-disciplinary energetic atmosphere ranging from construction engineers, via industrial economists to social scientists of both psychological, sociological and anthropological flavors, and also including a philosopher, a rapidly growing team developed a huge research community on organizational change related knowledge management. We named the community "Kunne",[42] denoting "knowing" in Norwegian, and connoting the art of knowing in both its "know-how" and "know-what" manifestations (cf. Polyani 1966; Duguid 2005).

The methodological approach in most Kunne projects was and still is partly formed both by the democratic work life tradition and by the institutional framework of the research institute sector of Norway. For Kunne this has meant ample possibilities for intimate, collaborative and interventionist research projects with small and large

[42] See www.kunne.no

organizations in both the public and private sector. Even if being somewhat uneasy with the labeling, we have described our projects as "action research" (cf. Greenwood and Levin 1998), adopting a general methodological framework called *co-generative learning*, were a joint research team is composed of insiders from the organization in question, and outsiders from Sintef, and possibly other partners, who form research tasks, process activities and deliveries in various collaborative constellations. Thus, the general idea is that both parties after project completion walk away with some or all of the following; new empirical insights, new methods and tools, changed practices, alternative theories, development of concepts and language. Our department in Sintef has no basic funding so the whole enterprise is based upon securing projects from counterparts. In the typical Kunne project an alliance with a group of organizations is forged and together an applcation for a research project is submitted to the Norwegian Research Council, in fierce competition, and if accepted the organizations typically finances about one third of the total project cost, and the rest is supported by the council.

In year 2000 a colleague and myself made a project agreement with Hydro Aluminium. Our first contact was the head of the business unit producing extrusion ingots. That is a midstream business area casting alloy metal for further processing downstream into customer products in a wide area of applications; from building systems, to automotive parts to packaging solutions. Their concern was how to develop better ways of documenting, sharing and conveying experiences from the project and start-up process of one new production facility to another. The challenge comprised issues of knowledge sharing, a common concern for all distributed "knowledge organizations". We followed closely the project and start-up process of a 200 million NOK investement in a new remelt plant set up in Azuqueca outside Madrid in Spain, and approached the task with a narrative strategy and wanting to develop the learning histories methodology further (described extensively in chapter four).[43] The result was a

[43] The concept of "Learning Histories" was introduced by Roth and Kleiner (1998, 1999). Sintef has in a series of projects used, developed and changed the approach (see Hatling (ed.) 2001; Røyrvik 2002;

web-based hypermedia history of the start-up process, told in text, pictures, presentations and short film sequences, presented as a jointly told tale by the participants themselves and the research team.[44]

After the completion of the project in 2002, another interesting possibility emerged, thematically in the same vein. The company had recently set up their first wholly owned light metal plant in Xi'an in the mainland People's Republic of China. It was also a midstream plant but producing *magnesium* alloys and anodes, mainly for the automotive market. It was a relatively small investment of approximately 40 million NOK. The President of the Hydro Metal Products area, who we first met after his inauguration speech at the opening festivities at the Spanish plant, was interested in extracting experiences from this first endeavour in China, as a small piece in the puzzle, to enable competent handling of start-up processes in further investments in China. Visiting their relevant sites both in Europe and China, and interviewing most of their internal "China-experienced" members, and some external partners, the delivery this time was a more traditional "experience report", completed by the end of 2004, distributed primarily to some of the top managers and the ones involved in the study.

During the project we met several of the company's executives, and thus about half a year after its completion we agreed upon a third major collaboration. This time the focus was on what came to be a 2.5 billion USD investment (that is the 50 percent share Hydro contributed), to set up the worlds hitherto largest aluminum plant in Qatar in the Gulf (Qatalum).[45] Strategically, this project was obviously in the forefront of all the executives' minds. Our role here was to be a part of a resource group to contribute to what became a sub-project of the larger Qatalum-effort called the "enabling project" (see Figure 15). This sub-project include almost all aspects of the project that is not directly related to the physical construction of the plant, for example organizational

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Røyrvik and Bygdås 2004; Røyrvik and Wulff 2004).

[44] See Røyrvik and Bygdås (2003, 2004) for descriptions and analysis of particularities and implications of the web-based hypermedia form of some of the learning histories that were produced.

[45] Largest in the sense of a new start-up. There exist larger plants in the world, but they have been expanded in many phases.

philosophy, recruitment and training principles and processes, human resource issues, and challenges and possibilities of cultural diversity.

During the China-project, in late 2003, I received a PhD grant in organizational anthropology from the university, to be completed at the department of social anthropology. The scholarship was offered after an application outlining, among others, a research case with Hydro Aluminium focusing thematically on knowledge sharing in relation to the company's processes of establishing international new corporate ventures. Especially I was concerned with investigating the management practices involved in these international projects. Still I kept a twentyfive percent position at Sintef, doing contract based research almost exclusively in collaboration with Hydro Aluminium, and this part of my work was also funded by them (see Figure 8 for a schematic outline of when I did respectively PhD research, Sintef research and when there was overlap).

It may seem like a giant step changing research focus from gypsies in Bulgaria to knowledge management in a Norwegian based (transnational) corporation.[46] The reaction from the local anthropological community, in methodological terms, was that no one ever questioned the reasons behind or the legitimacy of an anthropological study among the gypsies. The only thing someone asked was "why Bulgaria, why Eastern Europe?" Converting from ethnic studies to a form of organizational cross-disciplinary action anthropology, was a significant shift. An insidious feeling that such kinds of studies were somewhat "impure" dawned on me. Our research work at Sintef could be described as trying to support the organizations in question through a role as both constructive and critical sparring partners. Consternation and dismay. Helping the transnational corporate elites? The colonizers of the late modern world? The anthropologist who sold his soul to the capitalist devil? Was I being paranoid and delusional? To be restored to health and regain production capacity I had to take a deep dive into the literature on anthropological object construction, on methodology and the literature reflecting upon the constitution of the legitimate anthropological "field".

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[46] From a particular critical position both can be seen as "good symbols of bad things".

Who's elite anyway?

From the literature I was already familiar with, I knew *ethnographic* studies of modern organizations and institutions indeed existed but were still in much demand (see chapter one and two for a more extensive literature review).[47] Several prominent organization theorists, especially related to the huge field of "organizational culture", have voiced the need and potential of ethnographic studies in modern organizations.[48] As stated by Michael Rosen: "Ethnographic analyses of organizational culture are largely absent from the administration science literature, primarily because such work derives from a social constructionist understanding of science" (1991: 1). On the other hand, likewise illustrating the voice for more anthropologically based work in these areas, for example Batteau notes that; "… anthropological theory has yet to digest the twentieth-century phenomenon of instrumental organizations" (2000: 726). Narrowing down to studies of corporate management elites in Euro-American capitalism, such as my own focus, except for a few possible exceptions (Kunda 1992; Watson 1994; Linstead, Grafton Small and Jeffcut 1996; Ho 2005; Collier and Ong 2005) very few would qualify as being based upon ethnographic fieldwork. When it comes down to ethnographies of international or "global" corporate management I found nothing. As describe above, Linstead in his review finds that there is no extensive tradition of sociological participant observation in management research (1997: 96).

Soon I realized that the potentially huge program set forth by Laura Nader in 1972, were she outlines anthropological opportunities of "studying up" in their own societies, did not seem to have had a major impact on the discipline since her

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[47] There I discussed among other things the Hawthorne studies and the Human Relations school of organisational behaviour, but as Schwartzman testifies, the interpreted management bias found here has made many researchers to neglect and disparage this research tradition (1993: 25).
[48] See for example Van Maanen (1979, 1988); Pettigrew (1979); Meek (1988); Martin (1992, 2001); Czarniawska-Joerges (1992); Schwartzman (1993); Frost et al. (1991); Stewart (1998); Smircich (1983); Smircich and Calas (1987); Alvesson (2002).

announcement. Through both a theoretical and methodological reinvention, her hope was to redirect anthropology to "… study the colonizers rather than the colonized, the culture of power rather than the culture of the powerless, the culture of affluence rather than the culture of poverty" (1972: 289). With some possible exceptions (i.e. Cohen 1981; Marcus 1983; Gusterson 1996; Hannerz 1998; Pina-Cabral and Pedroso de Lima 2000; Shore and Nugent 2002), as Chris Shore reminds us over thirty years after Naders call; "… there have been few serious attempts to study elites ethnographically or to explore the politics of elite culture *per se*, particularly in 'Euro-American' societies" (2002: 10). While the study of elites remains underdeveloped, to paraphrase Pina Cabral and Pedroso de Lima (op. cit.), the focus of the elite studies have also to a large extent been outside of the societies of the anthropologists themselves.

The anthropological research focus on elites in Euro-American societies has, in addition to the recently emerging "anthropology of finance" referred to in chapter one, to a large extent been directed towards engineering, science and technology organizations and cultures, as for example the work done at and in relation to Xerox Palo Alto Research Center, as referred to in chapter two (cf. Suchman 1987; Lave and Wenger 1991; Orr 1996). Prominent in this stream is of course the corpus of work done by Bruno Latour and colleagues. This focus of research is also the most pronounced in the recent compilation of anthropological work on "technology, politics and ethics" provided by Collier and Ong (2005). Thus, as noted above, there are still few ethnographies targeting corporate managing elites. For our purpose here I adopt a relationship between my actors in the field and the category of 'elite' in the following way: "… those who are able to participate in 'technological' reflection – whether in the domains of economics, science, technoscience, or administration – are by definition 'elite'" (Collier and Ong 2005: 8).

The methodological and theoretical issues raised over three decades ago are still underexplored. As stated by Holmes and Marcus: "… the long-deferred and awaited anthropological study of elites… which by this time is belated" (2005: 248). How come this is still the situation? Is the concealment due to anthropology's own disciplinary

inertia, reluctance or aversion, or, is the problem to be found in the subject matter itself, some inherent constraint in the constitution of the modern elite object of study? As we shall see, the two are tightly intertwined. However, at this juncture it is important to emphasize, in line with Holmes and Marcus (ibid.) that the object of my study is not to portray an "elite community" or the "everyday life" of an elite, or the similar. I assent to the idea that the aim is not to study "… the interior lives of experts as an elite as such, but rather to understand their frame, which we assimilate by collaboration and complicity, for a project of tracking the global, being engaged with its dynamics from their orienting point of view" (ibid.: 248).

Anthropological study of modern power elites may appear, as Shore (ibid.) rightly testifies, as a somewhat troublesome and ironic endeavor to begin with. It is difficult to imagine a discipline with a more elitist history and approach than anthropology itself. Performed by and for white, western middle-class academics educated from the most prestigious universities, an intellectual elite reproduced by their almost exclusive interest in "exotic others", in radical alterity, at the expense of political and social institutions in their own societies. They have covered the world in the shadows of colonial powers, and, from anthropology's inception, been funded by the greatest financial institutions worldwide, be it Malinowski's program supported and institutionalised by the Rockefeller Foundation, the Ford Foundation's support of Geertz and companions, or the countless contemporary anthropologists financed by western state capitalism.

Anthropological studies of elites would by necessity instigate a heightened political self-reflexivity, and thus, offer a counterweight to the inherent elitism in anthropology itself. Such studies would, however, not remedy the more basic problem of representing others in terms of "them" and "us" or "up" and "down" categories, even if the relation between the "anthropologist subject" and his "informant objects" might in some senses be inverted.[49] Simply changing objects of study does not solve the

[49] Extensive discussions about these problems are addressed in the post-colonial literature (e.g. Fanon 1961; Said 1979 and Fabian 1983), and in the exhaustive critique of the concept of culture (for an

problems, rather, it seem to be inscribed in the very fabric of fieldwork practice and the writing of ethnography.

In their scholarly and widely read work Gupta and Ferguson (1997) investigates the origins, boundaries and grounds of anthropology as a field science. Interestingly, the term "fieldwork" was apparently imported by the former zoologist A. C. Haddon from discourses by field naturalists. Indeed, as Kuklick reports in the same book (1997), fieldwork must be understood as a general transformation of all naturalists' practices at the turn of the twentieth century. In company with zoology, botany, and geology, anthropology found its distinctive object of study and its method in the detailed study of limited areas (ibid.).[50] Fieldwork as the discipline's authoritative methodological practice is thus tightly linked to its origin as a science of natural history, as Gupta and Ferguson notes: "… the object to be studied, both intensively and in a limited area, was primitive humanity in its natural state" (op. cit.: 6).

Anthropology may thus be perceived originally as a form of human "primatology", requiring their research objects to be observed in the natural surroundings of their "native state" (Haraway 1988). This early foundational point of departure was merely reinforced, not invented, by the so-called Malinowskian fieldwork revolution[51]. But due to Malinowski's considerable marketing talent it has been fetishised in his name to the present day. Because of the slow abandonment of the other reified markers of the discipline's boundaries, the people to study ("primitive people in their natural state"), and the places to study (pre-modern, small scale societies geographically far away from "home"), fieldwork is possibly more central to the disciplinary identity today than ever before.

Summarizing the conception of the "field" and the interlinked processes of anthropological object construction, Gupta and Ferguson writes:

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excellent short summary see Brightman (1995)).

[50] See also Stocking (1992).

[51] Leaving aside the historical records telling us that the preoccupation with fieldwork more rightly should be attributed to Rivers on the British side, and Boas and Morgan on the American side, and that the naturalistic ideal of fieldwork had been dismissed as impractical by founding fathers such as Radcliffe-Brown and by Boas himself (Gupta and Ferguson 1997).

> "The word *field* connotes a place set apart from the urban… Going to the "field" suggests a trip to a place that is agrarian, pastoral, or maybe even "wild"; it implies a place… that certainly does not stray too far from nature. What stands metaphorically opposed to work in the field is work in industrial places: in labs, in offices, in factories, in urban settings – in short, in civilized spaces that have lost their connection with nature" (op. cit.: 8).

Cultural difference in this understanding is residing in geographical locations. And as Fabian (1983) has showed, this localization of cultural difference implies at the same time a temporalization, or historization, of difference. It is implied that by traveling to the remote "idealized" field sites we can observe cultural forms of the past, as it were, unfold before our eyes. On a further remove, this implies a dichotomization and hierachization of relations between "us" and "them". Related to the study of elites, the high value placed upon criticism in the social sciences has, as Sørhaug (2004: 25) notes, to some extent cast research on modern management as impure and somewhat suspect; at least unless you can issue absolutist guaranties of concluding with a critical attitude towards them. Anthropology, which promotes itself as studying people and phenomena on its own premises, provides, it seems, an ideological exception when it comes to elites in their own societies. Reflected upon from the perspective of both an action research and para-ethnographic approach (see below), the critical edge of anthropology is indeed under pressure. For what happens if certain defining distances between ethnographer and subject at least to some extent is closed? Not the least in expert and elite studies, in some kind of "complicit engagement" the threat of seduction is immanent (cf. Holmes and Marcus 2005: 249).

When contemplated in light of the above, my own feelings of field uneasiness and (sub)conscious quasi paranoia proved not to be just figments of my own imagination. Rather to the contrary. It was firmly grounded in the received tradition of anthropology's very real process of origin. My chosen study constituted along the most important dimensions the exact opposite, an approach upside-down, of what the legitimate anthropological "field" and legitimate object of study would look like from

the ideal and pivot primatology position. What on earth was I thinking? By necessity I had to rethink and further explicate what it was I was really doing.

The ambivalence of the management object

While developing a status of wearing at least two hats, that is, the Sintef projects action researcher and the PhD student in anthropology, I got more and more fascinated with the dynamics of international corporate management as an object of study. Starting out as being "worthy" of investigation in the first Sintef project, we saw the management of international project start-ups as instantiating exemplary forms of knowledge work and production. With time I developed a broader interest in the subject and realized this "field" could thematize a series of fundamental dimensions, relations and ambivalences of life under late modern capitalism: industrial vs. finance capital; hierarchy vs. networks; person vs. institution; leadership and authority; means of production vs. means of communication; economy of secrecy (proprietary) vs. economy of reciprocity (open source); information vs. knowledge and wisdom; standardization (homogenization) vs. multiplicities (heterogenization); sex and power; nature vs. culture, and, as Sørhaug (op. cit.) notes on what management may serve to illustrate; the instrumental vs. the expressive; power vs. trust; the unique vs. the governed; the realist (rational) vs. the idealist (normative), and, sense vs. sensibility. In short, it provided a potential fountain of fascinating and classic topics to explore.

In one of my two main fieldwork roles, as a Sintef researcher, my main concern was about coming to terms with the challenges the managers themselves worked on, to take on their world of trials and tribulations as well as celebrations, so as to be able to give sound suggestions and to perform adequate contributions, in short, be a sparring partner of some value. This did not entail becoming competent in paying lip service to management. To the contrary, our employers repeatedly asked for alternative thinking, new perspectives, a fresh look, another method or systematic, or way of improving things. They wanted us to suggest not only where their practices seemed to operate well,

but sought more "constructive qritique". Our value to them was the opposite of giving them what they already knew. And to be able to do that we worked hard to learn what they already knew about themselves.

Critical in this respect is to avoid both the "theorist and "consultant" trap. That is, on the one hand for example blinkered theorists with little respect for experience-based knowledge, providing ready-made answers drawn from theory up front, or, on the other hand, professional consultants with a costly solution in search of a problem. Thus, one of the most critical competencies related to accomplishing a research project in this context is to quickly learn their language, understand their practices and to understand their frame, and subsequently to twist and turn it, play with it, challenge it and assess it.

This is not to suggest, however, that the fieldwork situations were void of dilemmas. The most urgent ones relate to the extended consequences of the collaborative, partnership type of ethnography that I have been conducting and advocating; dilemmas made further acute by the elite culture of expertise context of the study. Below I will be arguing that this type of ethnography constitutes one form of realization of the *"para-ethnographic"* program recently outlined by Holmes and Marcus (2005). One key feature of my study is that in certain senses the distance between ethnographer and expert subject is closed, and that this complicates the role for critical arguments in the study. As Holmes and Marcus notes:

> "Most often, critical ethnography has served to undo and demystify the common sense of established institutions, centers, dominant discourses, and elite practices, but such critiques are delivered from the distance of the "scholastic point of view", and often in sympathy with some subordinated, often silenced, subject…" (ibid.: 249).

In some agreement with their position I have found in my study that this distance has been closed in some ways, and that the pure sympathy is made ambiguous. A consequence is that the standard "distanced demystifying" strategy of critique has been discarded as a viable option. The danger, then, has been to be utterly consummated, or seduced, to join completely the community and sphere of expertise that I have been engaged with, to turn into a "house anthropologist", to "go native", as it where, and thus

abandoning the critical project altogether. Although not being cast explicitly in the light of a "critical study", my project was constructed with the aim of open-ended exploration, where critique was an integral and self-evident component.

Several aspects of the fieldwork context, for example the movement between different locations and internal communities, seems to have created a space for open-ended critique "from within", or better, from "the borderline", so to speak. Like Duerr's analogy of the researcher as the witch who is actively positioned on the fence, with one foot on the inside and one on the outside. As Sigurd, one highly experienced project expert, never failed to underscore, in his always sturdy and interpretatively complex put-down and simultaneously caring rhetoric: "you guys, you know you cannot possibly solve our challenges, because you haven't our shoes on!" Nevertheless, also the distanced demystifying strategy of critique might be said to have been pursued in the present study, especially in the analysis of the more "macro level" capitalist system phenomena.

Furthermore, the threat of seduction, for "going native", has been resisted on several levels. Holmes and Marcus (ibid.) addresses two key concerns in this respect, one is the sense of a new personal opportunity that opens up in this type of research, and the other is the widespread desire for some sort of activist dimension to ethnographic work. Because of my prolonged experience with collaborative, co-generative research projects with diverse organizations in the realm of modern economics and society, the first issue has been contemplated at several junctions. Regarding the possible attraction of joining completely the organizations with which I have been working, indeed, people have moved both from their research position to the partner organization and from partner organizations to the research institute, so the situation is familiar. For my own part, the attraction of the double outsider/insider researcher role has so far completely outweighed any personal possibilities of joining the partner organization.

The second issue of the desire for an activist dimension cannot either be discarded. The self-labelling in "Kunne" of our approach in projects has been "action research", and although everybody has felt somewhat uncomfortable with the notion we

have used it. In action research (cf. Greenwood and Levin 1998), the activist side is highly visible. In my work with Hydro the activist side has thus been played out in my role as Sintef researcher, whereas it has been actively downplayed in my role as PhD student. What makes the "activist desire" somewhat special in this case, is the elite and expert kind of context in which the study has been taken place. Although the head of Aluminium in Hydro at one point jokingly said that the success of our PhDs were dependant upon the success of Hydro in their new projects, at the end of the day, the "activism" with which our projects brings to the table, "making a difference" in this kind of a system, as it were, is both highly ambivalent and highly marginal.

One key implication of the dilemmas outline above has been the issue of in which role I participated in social events during fieldwork. The Sintef researcher and advisor role or the anthropological student role. Some of my key collaborators always saluted me with the variants on the theme "how is the student doing?" The greeting was an explicit way of joking with my (at least) double status. "When are we going to get anything useful from these students", was another favorite. This double role was, as I have argued, more of a strength, as in this case it was made the source of communicative fooling around. In gathering data this doubleness could, however, be problematic in terms of which themes to focus on in discussions and interviews. As a PhD student my interests in the people I was "studying" was much wider, broader and deeper than in my role as a Sintef researcher. Thus, under the omnipresent time pressures in many fieldwork situations there had to be a trade off between focusing on themes, actions and getting information that was instrumentally needed in the Sintef projects versus more open ended communicative interaction, participation and discourse favorable to my PhD project.

The fact that the Sintef projects were partly paid for by Hydro had of course also some impact on these issues. The upside was gained in terms of wider access and the possibilities of doing a multisited comparative study, while a the downside could have been interpreted as pressures from the company of what should be the focus of study. However, there were no explicit efforts in guiding the direction in what I could choose

to focus upon in my PhD study. But because the field was opened up for my PhD study through the Sintef projects, which were designed partly upon requests and wishes from company members, there were of course constraints in this respect. However, I rather interpret this in an opportunist way. These constraints provided me with the possibility to study phenomena from which I think I otherwise would have been excluded. The constraints were also co-created by the research team(s) and myself. Also, this unfolding of my fieldwork trajectory ensured that my study followed, at least to some extent, a path of key concerns for members of the organization.

Similarly, when visiting, interviewing, observing and to a limited extent participating, at the investment project and production field "sites" and in the field "flows", the management of this double role had to be carefully improvised and handled. To get the attention of members and access to meetings the role as Sintef researcher in collaboration with Hydro often had to be performed. However, this role could easily lead to an image as being "sent from headquarters to audit the operation", so the emphasis on independent research also had to be stressed in some contexts, and the formal regalia as "advisors" both I wanted to downplay as quickly as possible and rather incorporate the role as a curious and largely ignorant student.

Although this juggling of statues at times was far from straightforward, it somehow seemed to work. One reason might be that corporate managers and other members themselves are very much familiar with professional status shifts and role-playing, based upon multiple roles, according to circumstances. An illustration of this could be in the opening of an interview I did with a top-level corporate manager. During the first minutes he felt the need to clarify his own role related to the interview situation and topical circumstances and said: "Who am I now? Well, as far as it goes I am the same as I have always been. For what I am going to talk about now, however, I think we should see me as a manager who has experience in restructuring plants, closing down or transforming companies".

Para-ethnographic interactions

What type of space then, is kept open for a critical argument, when the standard distanced mode has collapsed in the para-ethnographic approach? One thing is the case that Hydro in this respect seems to be an exceptionally open-minded company, where the "ceiling is high". When I discussed with key members the question of anonymization, for example, the standard reply was related to the unnecessary complications this would entail for my work, and that possible criticism they would handle. Individual members, of course, could be more cautious and secretive, depending on a range of factors. I chose to keep the corporate name and locations open, while anonymizing all person names except President and CEO Eivind Reiten, and have also created "ideal" person types. That is, to conceal people somewhat. To a minimal extent personal characteristics, occurrences, encounters and quotes have been "mixed and shuffled" a bit in time and space. All empirical material is, needless to say, real and not "fictitious" in any sense.

Nevertheless, it seems at the end, to be able to do anthropology out of a collaboratively oriented ethnography, to break free from the arguably necessary methodological "complicity" (Marcus 1998a), that there is a necessity of some sort of "betrayal" to gain research project "independence". As contemplated by Holmes and Marcus in their proposal of the concept "para-ethnography":

> "At base, then, the postulation of the para-ethnographic is a somewhat veiled, maybe even hesitant, overture to partnership or collaboration with our counterparts found in the field. There is quite a bit of ambivalence in making this overture. It may or may not work out. It is perhaps disturbing to think that we are more like some managers of capitalism or some politicians than we would like to admit. The overture may even be the path toward eventual betrayal, as the project eventually establishes independence from the orienting, collaborative ethnography with counterparts" (2005: 251).

A somewhat related dilemma was intertwined with my role as an "information agent". Participating in a series of situations, contexts and relations of importance for diverse groups of company members, I accumulated knowledge that had organizational value.

Take Gard for example, one of the key technical expert in Hydro, and one of the actors with vast experience himself as a "para-ethnographer" in his own company; one time we met accidentally in the garage of the corporate headquarters and had a brief informal talk about some important aspects of project life in Hydro he jokingly referred to himself as "deep throat". When I met him in China at one occasion he emphasized that I I should not tell people where we met around the globe, about where he was situated geographically at different points in time, because this could allow people to see patterns that were supposed to be opaque. These patterns were typically related to new and emerging business possibilities for Hydro.

Similarly, he and others wanted information from me that they could use in pulling together "bigger pictures" of movement and trends within their own organization. "What is his position on this and that subject, why was that decision taken, who is taking over as manager of that area", and so on and so forth. This made me embody some of the dilemmas of possessing "secret knowledge" which many of my "collaborators and informants" themselves experienced and managed. It was as such a valuable experience in the "epistemology of secrecy" that is analyzed later (chapter five and ten).

A significant point related to the discussion about access and role in the field is that both me and my colleagues in the Sintef-projects had to "prove some value". We had to be useful. This is probably different from working in a more "anthropologically ideal" setting. From a certain perspective you should not need, at least not to get access, to be useful. When forced to be useful the chill hand of the instrumentalisation of relations is not far away. But as several authors has discussed, related to for example fieldwork in organizational contexts, you cannot simply set up your tent in the field of management. Usually you need some reason to be there, apart from a wish to study "them". Furthermore, "studying up" could prove more difficult in terms of access because there is seldom any upside for elites to be studied. As Eriksen notes: "Studying up tends to be more difficult than studying down. More is at stake for the rich and powerful than for those who 'have nothing to loose but their chains', they have less time

on their hands and they risk more by talking informally to strangers" (2006: 99). So what kind of access did I get?

In the first Sintef-project, after some brief meetings with our employer, the head of the extrusion ingot business unit, in the Hydro headquarters in Oslo, my research colleague and myself traveled to Spain for our first visit at the construction site. The mission was to document the start-up processes using the learning histories methodology (see chapter four). In our first meeting with the project manager and the core team we were promptly asked about our mandate and the scope of our work. We were taken a bit off guard this first time, because we imagined that being sent by the head of the unit, all questions were taken care of. At first we were clearly seen as intruders and another disturbance to their highly intense and complicated work. Recapturing our nerves we had to convince them about letting us stay and defend our role as "contract researchers", giving a brief presentation about the nature of our work.

Reluctantly accepted we later interviewed one by one all the members of the project team, participated in project meetings, in steering committee meetings, talked to corporate sponsors, and interviewed the local operational workforce which were hired and involved in the work as the project moved on. We had dinner with the project team at night, were present the first day "at work" when the operators for the plant had their introduction to the company (see chapter six). When the members of the local organization received training at the well-established production facilities in Sunndalsøra, Norway, we were present. The period of the main empirical investigation related to this project lasted from May to November 2001. This entailed 3 fieldtrips of about one week each to the Spanish field site, two trips of two to three days to the Sunndalsøra site, and two visits to the headquarters in Oslo. About 30 people were interviewed, and about eight to ten of them were interviewed several times. We got access to planning documents, minutes of meetings, presentations, and some e-mails. We met face-to-face, had telephone interviews and conversations and discussed our findings and theories about what took place. We took pictures and filmed about 20 hours of digital film, from interviews, the construction site and the training processes.

With this material we constructed through several iterations, also involving the project group, a narrative, web-based multimedia learning history that we labeled a "knowledge hyperstory" (Røyrvik and Bygdås 2004; see chapter five and six). This was presented and handed over to the management group of the business unit. Later, in April 2002, after the plant had begun production and entered normal operations, we had another week's trip and added an "epilogue" to the story. As solely a part of the PhD work, a final visit commenced in June 2006 to recapture some of the history of the plant's first years of operation. In the period in between these visits, continuing contact was kept with key managers and experts in the Hydro organization that held various types of responsibility and engagement for the Azuqueca project, the plant and other ventures in the Hydro network (see Figure 8 below).

The China project developed with a similar process, although constituted in some respects by a broader scope of concerns and of involved actors. Our Hydro Aluminium employer now was a President of the corporation and the superior of our former employer. Under his auspices the magnesium division had in September 2002 opened a magnesium plant in Xi'an, the People's Republic of China. It was their first wholly owned plant in the country, and the President, after learning about the nature of our work in Spain at the inauguration of the plant, invited us to have a look at the Xi'an project. After two additional meetings we agreed upon a project mandate, to extract as much significant learning as possible from the Xi'an project, to be used as input and background for possible future investments in the country.[52]

Because of this extremely interesting opportunity, and the completion of the Spain project, we wanted to catch the first airplane to Xi'an to dive into the empirical realities on site. However, complaints about hiring "outsider consultants" from a vice-president with China responsibilities in the organization lead to delays. Before doing anything we had to convince him about our contract researcher and PhD student (not consultant) roles. A gatekeeper to China. Difficult at first, but when he realized we were

[52] The project description outlined in much more detail the main focus areas, but we were still left with substantial degrees of freedom.

not hired as “China experts” to lecture them about business etiquette and whatnot in China, but rather was to collaborate to help convey their own experiences and lessons learned of good and bad, he changed his mind. He turned out to be most competent and later one of our most significant “informants”, also enabling our first trip to China to become much more useful. During the Sintef project we visited the representative office in Beijing, interviewed the most relevant people there, traveled to Xi’an two times, spoke to most of the project-people, meeting all the local managers, and staff from all departments, operators included. In Xi’an we visited Chinese officials at the industrial development zone and managers from several other international companies.

After receiving the PhD grant the distinctions between Sintef work and PhD became imperative. My way of differentiating was to think that what Hydro financed was Sintef work. During the Xi’an project we met with a lot of people in the organization and got involved in several other of the initiatives that related to China.[53] However, after the magnesium project it was difficult to find a new sponsor in the company, they claimed the work was relevant to all sectors and thus should be financed “from above”. Thus, I financed two more visits to China by university scholarships, investigating solely as a PhD student a 200 million NOK investment in a Hydro Aluminium new downstream precision tubing project and plant start-up in Suzhou, outside Shanghai, and also another older precision tubing plant, a joint venture located in Wuxi also close to Shanghai (see Figure 8 below).[54]

Both plants are producing components, advanced aluminium “precision tubes” used in heat exchangers and air condition systems in the automotive industry. I made interviews, partook in meetings, toured the construction site, talked to project people and operational people alike. Sometimes I participated at dinner with both local staff and other expatriates working temporary at the plants, went to expatriate parties, and

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[53] For a brief history of Hydro’s recent year activities in China, and a concise overview of the “China-trilogy” of Hydro projects in Xi’an, Wuxi and Suzhou, see Røyrvik (2008).

[54] All four travels to China lasted about 14 days. All of them included visits to three (in only one trip the Representative office was visited, and that time the two precision tubing plants where not visited) of the four Hydro Aluminium sites in mainland China.

tried to learn as much as possible about China and the three cities. One of the managing directors wrote a diary of his experiences of moving to China and the start-up of the new plant, which he confided to me. I got access to the same type of documents and presentations as in Spain. In addition a visit to the oldest Hydro magnesium plant in the world also commenced, in Porsgrunn, where several of the people helping the Xi'an start-up worked. I also went to Brussels to visit the magnesium headquarters, where sales and marketing is located.

In May 2005, in the third trip, I attended the exclusive inauguration ceremony of the new precision tubing plant in Suzhou. This feat was achieved partly because of the good relationship with the managing director and also because of a fruitful interview and meeting with the Executive President, the head of Hydro Aluminium. During the days of the I also met with the President of the sector responsible for the new upcoming aluminum plant in Qatar, the largest in the history of the company, a project now in the earliest planning stages. Back in Norway, and several e-mail exchanges and meetings later both me and my colleague became as noted earlier part of a resource group related to what came to be called the "enabling project" of the Qatalum investment. In this capacity we participated in the early phase work, which to large extent was located at the Oslo headquarters. We gained temporary access and worked for longer periods of time out of the headquarter offices, but did not travel to Qatar. Our main contribution to the Gulf project was to collaborate in conceptualizing and designing a framework for "competence management" in the pre and post-start-up phase of this (and future) projects.

All in all I have talked formally and informally to well above two hundred people in the organization, conducted interviews with about 115 of them (including people outside of Hydro), many of these interviewees several times over. I have visited ten of their geographical locations, the corporate headquarters, a division headquarters (including sales and marketing), seven project and subsequent production facilities (two of them including visits to research centers), and one representative office (see table 2).

Organizational unit	Location	Number of interviewees	Participant observation	Non-particip observation	Manager meetings	Open documents	Confidential documents	E-mail exchanges
Corporate headquarters	Norway	15	X	X	X	X	X	X
Project/Production 1	China	19	X	X	X	X	X	X
Project/Production 2	China	6	X	X	X			X
Project/Production 3	China	12	X	X		X	X	X
Project/Production 4	Spain	15	X	X	X	X	X	X
Project/Production 5	Norway	6		X		X		X
Research Centre	Norway	5				X	X	X
Subcontractors	China	7		X				
Representative office	China	8		X			X	X
Industrial zones	China	5		X		X		
Official representatives	Europe	5		X		X		X
Other global management	China	12		X		X		X
Total		115						

Table 3. Overview of main fieldwork sites and methods of data gathering.

The question thus begs itself: Is this the way ethnographic fieldwork is supposed to be undertaken? In light of the above literature exposé, its seems questionable. Can these kinds of practices be labeled participant observation? Before making any self-judgmental claims about the status of the work, let us look upon some of its distinctive features, which in turn may shed a more general light upon ethnography both as polymorph practices and as a reified identity construct of disciplinary boundary demarcation.

Reconfiguring ethnography

The first obvious thing to notice about my fieldwork practices is that "the ethnographic trilogy" (Trouillot 2003: 125) is challenged; that of the one researcher, spending prolonged time in a continuous fieldwork, and in one geographical separate and discrete location. My fieldwork has been conducted in ten geographical locations, a substantial part of the fieldwork done in the Sintef research projects has taken place in cooperation with another research colleague (also in a dual Sintef researcher/PhD student role), and also with collaboration from people in the company. Furthermore, although I have had a collaborative relationship with the company for nearly six years, I have been "in and out of the field"[55] constantly, and each "continuous batch" of "localized" fieldwork has

[55] Again evoking the notion heralded in much anthropological conceptualizations, that culture resides in discrete geographical places.

hardly been in the extent of two weeks. However, the particularities of time and place in my fieldwork have become more and more common in anthropology in recent years.

Nonetheless, although there is a well-established body of ethnographic research from complex capitalist societies, such as workplaces, neighborhoods, hospitals, jails, bars, these may to a large extent not be seen as innovative. They study bounded settings in the most conventional way, and, as Marcus notes:

> "… isolates parts for holistic treatment, but leaves direct perspectives on total social systems to other kinds of specialists. In so doing, it evades the challenge of how ethnographic research, through the study of particular subjects, can account for or describe whole systems of societal organization" (1983: 30).

Anthropologists now do multisited and multitemporal fieldwork, but the terms has been in use only the last twenty years, advocated especially by George Marcus (1986) and Marcus and Fischer (1986), and proliferated especially at Stockholm University since the middle of the nineties (Hannerz 2003).

Furthermore, in the "networked society" (Castells 2000) of jet planes, Internet, omnipresent and mobile telecommunications, real-time, electronically integrated global financial markets, transnational companies and global media; it is quite obvious that localities are extended in space, and that movement and cultural flow is at the crux of the matter (cf. Appadurai 1996). Although perspectives on globalization are entering the mainstream of the anthropological discourse,[56] the conceptualization of the geographically located field still stands strong. My multi-sited field could be seen in light of Appadurai's (op. cit.) notion of translocalities, Hannerz (op. cit.) reflections about the translocal field, and also Auge's (1995) ideas about a field of "non-places" in an anthropology of supermodernity.

The wholism I seek to describe through investigating "managing" is akin to Marcus' exploration of elite "dynasties" (1983). "Wholism" is a term I prefer to the arguably more discredited notion of "holism"; although Stewart argues that ethnography

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[56] See for example Featherstone (ed.) (1990); Jameson and Miyoshi (eds.) (1998); Appadurai (ed.) (2001); Eriksen (2003).

continues to hold, a rather limited, holistic mandate (1998: 6). Like notions of dynasty, ideals and ideas of managing exists across a variety of contexts and settings transcending time and space, while still allowing periodic stability, particular manifestations and relations connecting locales. In "imagining the whole" of anthropological object construction, Marcus notes: "Spatially uprooted, mobile cultural phenomena like "dynasty", then are what ethnography needs to explore to fully conceptualize new ways of thinking about contemporary conditions" (1998b: 54).

As noted in the thesis' Introduction, I consider the field of projects, and the managing of them, as "global assemblages"; both emergent, decentered, ephemeral and fundamentally characterized by movement, while nonetheless exhibiting orderness and structuredness in quite an extreme sense. As an analytical conceptualization of my research field both in terms of space and time, I thus choose to follow the movements and *flows* of managers and their actions, knowledge, "technology" and money capital related to bringing forth projects. The spatial field is not bounded by the particular localities of the sites of the emerging plant, but rather the "fieldflows" involved in the bringing forth of the projects. An outline of the main movements and limits of my spatial fieldflows is given in figure seven.

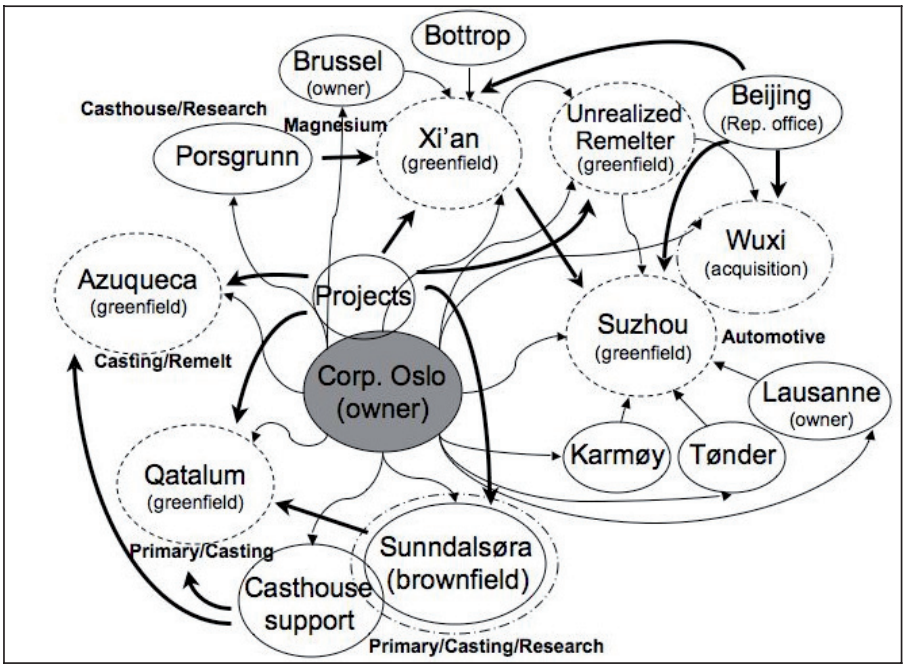

Figure 7. A sketch of the spatial movements constituting the main "fieldflows" of people, concepts, knowledge, capital and technology involved in the emergence of the Hydro projects and plants investigated.

The projects investigated are encircled by a dotted line, signifying the emerging status of the endeavor. The main established corporate organizational bodies involved in the bringing forth of the projects are also indicated, encircled by whole lines. The main business unit and industrial area each project belongs to is written in text close to the project circle's. The Azuqueca project belonged to casting and remelt in Hydro, Xi'an belonged to the magnesium organization and both Wuxi and Suzhou was part of Automotive. The arrows indicate the main flows, and the more bold lines indicate a "stronger" flow. While the levels of recursivity of the system is somewhat indicated, the whole complexity and multiplicity of the flows of recursivity escapes the schematic outline.

Sunndalsøra was both a well-established production plant and a major investment project, making it a "brownfield" rather than a "greenfield" project. A

"greenfield" project is a plant made "from scratch" on an empty land site. The Sunndalsøra project is not utilized more than as a "reference project" and important Hydro Aluminium site in the current work. It was not extensively investigated. Sunndalsøra is also locating the "Casthouse support" organization, a competence center of experts serving the Hydro world-wide network of casthouse projects and plants, with which I have collaborated extensively.

All three of the Azuqueca, Xi'an and Suzhou projects were "greenfield", while he Wuxi "project" was not a project in the conventional notion of the term. It was rather an acquisition of an established Chinese plant made by Hydro in 1999, and formally designated a joint venture with the Chinese partner. The brownfield "upgrade" project of the facilities was never accomplished, and the Hydro shares of the plant were in 2007 sold back to the Chinese partner. Labeled "Projects" in the figure above is the corporate organizational body formally and practically in charge of executing investment projects in Hydro.

The total time I have spent "in" the field is well above the Malinowskian "norm" of one year, even though it has been stretched out over a total time span of nearly six years. This has been practical in many respects, for instance by not having to leave my family for an extended period. Furthermore, the rhythm, durations and movements I have done in the field, are closely modeled upon the actions of my manager informants/collaborators. Their work of mobilizing resources from many different locations in relation to new projects, the enabling of successful start-ups of new production units all over the world, is inherently translocal; an abundance of jetplane travels, extensive use of internet and mobile telecommunications, teleconferences, hotel seminars and "clean desk policy" office work. In figure eight an outline of the types of fieldwork conducted in conjunction with the main projects indicated on a timeline is provided. Alluding to the multisided and flow-oriented spatial conceptualization of the research process above, here a multi-temporal notion of "time-flows" is outlined.

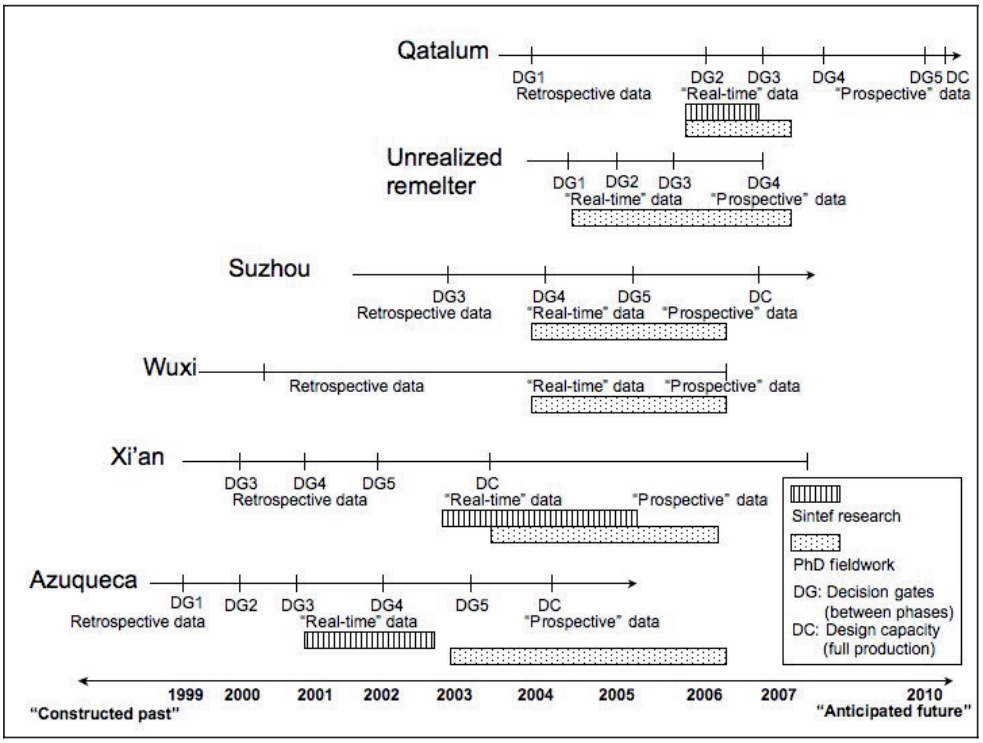

Figure 8. Time-flows of fieldwork exploration and data (re)construction, related to the main projects investigated. "Sintef research" refers to Sintef-Hydro contract research projects that I led or participated in as a researcher related to the start-ups mentioned.

The time-flows are structured along a timeline, since the first research collaboration with Hydro commenced in the Azucueca project, and further outlined for the various projects. I have distinguished between times in the field spent in Sintef research projects, as a PhD student, and times where combined roles have existed. Somewhat imprecise I have differentiated between real time, retrospective and future oriented "prospective" presence and data. Although all data have been collected in real-time, it signifies the emphasis put on both historical trajectories and the acute future orientedness of project work as well as the research process itself. Although not all the projects have been formally supported by the Hydro project decision support model, the "Capital Value Process" (CVP), comprehensively analyzed later in the dissertation (see

especially chapter six), all projects have gone through similar phases and major turning points ("descision gates"). These have thus been indicated in Figure 8.

Missing in the above figure is especially the time spent at the headquarters of Hydro, were also the "Projects" organization is located. This is also related to another issue which is not explicated in the above figure. As noted earlier, I have been "in and out" of the field more or less constantly. Traveling to and from a multiplicity of different locations central to the project work that I have been investigating, and also being "in the field" while on the phone or sitting in my own office reading e-mails or Hydro-related documents. Giving a precise timeline for my exact times "in the field" thus proves impossible. Combined my field comprises a heterogeneous "time-space" of "fieldflows", "globally assembled" and thus "kept together" by the movements of people, money capital, knowledge and technology related to the bringing forth of the projects investigated.

A further distinctive feature of my fieldwork is as described above obviously that I have nurtured a double role of contract researcher at the one hand, and being a PhD researcher at the other. I believe the former and arguably more interventionist and "instrumentalist" role has been a spearhead of getting access and establishing a relevant status as a kind of "insider" in the organization. It has also been pivotal in the construction of a participative role. Furthermore, I would argue, without such a participative role, the fieldwork would have been impossible to accomplish. Also, enacting the role as an action researcher I have been actively discussing, arguing and challenging the practices and world-views of the people I have worked with, while at the same time, we have in collaboration been creating new methods, frameworks, concepts and language with common goals in sight. As for this role being more or less different than other anthropologists in the field, I agree with Hart (2002) and many other leading anthropologists that see ethnography as a form of intervention, active engagements with various others.

Following Nugents' (2002) distinction between "accessible" and "effective" elites, anthropologists may be able to get access to the former while the latter is difficult

to approach and has no structural need to consent to being studied (Lotter 2004). Also Kunda discusses the difficulties with access, as he describes was inversely related to hierarchical level. As a result he spent most of his time among staff "… largely because contact with staff was easier, and my role as observer-confidant-interesting guy seemed to work" (1992: 236). He complains about "… continuous and often frustrating contact with protective secretarial gatekeepers" (ibid.). The first time I spoke to the personal assistant of the Executive Vice President, it was on the phone. She called me up after an e-mail inquiry to get a meeting and an interview with the EVP. She reads all his e-mails. A big part of her job is to be a filter, a gatekeeper, to be "nice but difficult", as she described her role in a more informal talk over lunch later. On the phone she thus immediately prompted me that most probably it was someone else I should talk to. Trying to persuade her, as both company members and non-members alike tries to do all the time, and being somewhat presumptuous, I suggested in the same vein to participate in the top management meeting to be held in China soon. A short silence, then she exclaimed: "ooouahh… well, that has never happened before in history… as far as I can recall".

Ethnography of an elite organization, Marcus (1986) writes, can most likely be done with the out-of-power, the retired, among the elites in decline or those of marginal importance. Without my status as a contract researcher access would have been very difficult and, I believe, participation impossible.

Another notable feature of the work has been that I have not gained a particularly deep, personal and intimate relationship to many of the actors in the company. Except for two or three people, my relationship with them has been "restricted" to the professional sphere, although in several cases, due to my status as a researcher, we have jointly explored this sphere somewhat beyond the borders of how they in daily interactions would define it. Leaving aside several restaurant dinners and an occasional party, we have not spent a lot of time informally "out of office". I have not visited people in their homes. This prompts interesting reflections about ethnography in elite and expert social environments. Why do anthropology under such

circumstances at all? “Is the point of doing fieldwork among experts to do a conventional ethnography of them?” asks Holmes and Marcus (2005: 236). I concur with the answer they provide:

> “The anthropologists does not study the lives of central bankers, for instance, because they have the same kind of interest that the everyday lives of the Tikopia, the Tongans, or the Nuer have had for anthropologists. Indeed, rarely do ethnographers have access to the details of the everyday lives of expert subjects… We believe it is highly unlikely that a robust ethnography of “everyday life” can be done within these cultures of expertise…” (ibid.).

It is possible also to ask, if it indeed could be done, what the “value-added”, to paraphrase management rhetoric, of these types of studies would have been.

On the other hand, anthropology’s “signature” must be found in the inquiry one way or the other. As noted above the solution of Holmes and Marcus is a kind of re-functioning of ethnography, which they label “para-ethnography”, where another kind of “native’s point of view” still remains in the domain of experts. This is a space were the concept of “experience” is central, both as an anthropological signature and as a bridge towards the dominant forms of knowledge production in the expert domains of study. The para-ethnographic dimension is the identification and engagement with “… the *de facto* and self-conscious critical faculty that operates in any expert domain as a way of dealing with contradiction, exception, facts that are fugitive, and that suggests a social realm not in alignment with the representations generated by the application of the reigning statistical mode of analysis” (Holmes and Marcus 2005: 237).

Critical to this mode of doing ethnography is its status as a kind of marginal social thought, in “… genres such as “the anecdotal,” “hype,” and intuition – within practices dominated by the technocratic ethos…” (ibid.). Nevertheless, statistical mode of representation is also utilized in the present work. In enabling images of large scale processes numbers have “always” been crucial. As Hart argues, for example, it seems necessary to utilize numbers in the form of statistics to form the imagination of our moment of “… world society in a meaningful sense” (2002: 27). Statistics of the “human community as a whole” might countervail the fragmentary perspectives

produced by the national consciousness; the latter having been projected by statistical extrapolation for about a century. Especially related to macro-economic measures of wealth creation, distribution and economic inequality on a large or global scale are statistical representations utilized in the present work. Being too cumbersome I do not embark upon various critiques and qualifications of, and constraints embedded in, the statistical modes of representation. Most of the works cited have themselves qualified their own use of the statistical material.

In my work, the *anecdotal* as a form of "representing" and enacting the "native point of view" of corporate members, in relative tension to "official accounts", play a crucial role. In my perspective, the anecdotal is a sub-genre of *narrative* modes of communcation and knowing. In a landscape largely defined by abstract idea and conceptual work, the narrative modality, both as a *para-ethnographic* research strategy and a mode of conveying and communicating, provides possibilities sought utilized in numerous ways the present thesis. In chapter four I outline a detailed program of a narrative based engaging para-ethnography, simultaneously exemplifying and discussing *parts* of the empirical material of the thesis.

In relation to the narrative modality, much of the fieldwork is based upon interviews. Most of them with single subjects. Some have been conducted alone, and some in collaboration with my colleague. The romantic ideal of becoming friends with the ones you study, of nurturing deep emotional and morally contingent relationships is very difficult in a multisited study, and considerably intensified in a complex capitalist elite context. Again, this contended downside need to be mirrored against what kinds of relationships that are fostered by the members of the company themselves. Managers change positions frequently, project teams are formed from a global pool of people, and dissolved after project completion. Although long-term personal networks exist and are important in many respects, few foster any deep relationships outside the work context. In these kinds of studies, as Hannerz (op. cit.) notes, personal relationships to the informants are not of particularly great importance, as long as one are on good speaking terms. Doing interviews as the most common fieldwork technique is also modeled upon

the scripts of communicative interaction of the organizational members themselves. Managers regulate their interactions through systematic procedures of scheduling meetings. Conversational interviews, of approximately one hour each, fit in nicely with this socializing regime as a legitimate way of interaction.

A final characteristic of my fieldwork, with general interest to ethnographic research, is the use of an abundance of diverse material simply not available or existing in the ideal naturalist, "primatology" studies of the Malinowskian type. Once access is secured, and even without, my type of field offers a range of highly significant but untraditional "ethnographica"; from newspaper articles, TV-debates, and Internet presentations and a variety of official reports (for example annual reports), to intranet web-pages, internal interactive net-cafés, company ICT systems of diverse types, pictures and movies, internal and confidential documents, like minutes of meetings, reports and evaluations, e-mail exchanges, presentations and forecasts. Alluding to Hannerz (op. cit.), the significance of media and media materials is strong because it is partly constituting and holding the translocal fields together, making them "trans" rather than "multi".

Below I present a brief schematic overview of the major forms and categories of empirical data on which the study is based, seen in relation to the research design and analytical framework outlined in the last section of chapter two. The following short list is at the same time a template of the main modes whereby managing actions are instantiated, expressed and enacted with their "instruments and encasements", as a bringing forth of projects. Both language-based and non-language based idioms and codes are included, also conceptual dimensions of time and space, and arenas and materialities of communicative action; all through which the managing actions in projects and the knowledge tradition(s) are expressed (historical and statistical data are omitted, see table 2).

1) Language based idioms
    I) Verbal communication

a) Informal face-to-face talk (in "quiet rooms", hallways, lunch-time, open space offices, at the shopfloor, project dinners, and other arenas)
b) Face-to-face and telephone interviews
c) Official external presentations
d) Offical internal presentations
e) Internal meetings
f) Project work meetings
g) Virtual meetings (phone, teleconferencing)

II) Written and multimedia communications

a) Corporate textual information, internal and external
b) Pictures and official presentations
c) Project reports and presentations
d) Project models and templates
e) Plant design drawings
f) Internet presentations: text, pictures, movies, "live casts"
g) Intranet presentations: text, pictures, movies, intranet cafés
h) Project related e-mails
i) Project and corporate related flow charts, tables and numbers
j) Public media discourses (i.e. newspapers, TV-debates)
k) Hydro consultancy reports

2) Non-language idioms

I) Objects (public/secret, like project design models) and acts (like taboos and celebrations both in projects and like the centennial celebration)
II) Clothing (suits and worksuits, protective equipment)
III) Body-language
IV) Material metaphors of the body, buildings, technology and products

3) Dimensions of space, time and occasion

I) Ordering of experience in time (i.e. scheduling of meetings, phases, projects; jetlag),
II) and space (project and plant locationing; buildings; traveling)
III) Degree of space-time "distancing" in communications (i.e. from face-to-face to dispersed and virtual communications, synchronuous and asynchronuous)

4) Organization of persons and audiences

I) Titles and roles (i.e. hierarchical; occupational and epistemic)
II) Categorizations according to the salary and compensation system
III) Sexuality and gender (male/female)
IV) Egalitarian/hierarchic (participation and steering, i.e. project steering committees)
V) Assembling and break-downs in size and diversity of project and work groups
VI) Internal jurisprudential groupings (i.e. goverance structures and unions)

VII) Various scenes for "mass communication" (public, e.g. Capital Markets Day; parts of the centennial celebration, and internal, e.g. seminars, centennial celebration)

A brief note on the use of language during fieldwork might at this point be appropriate. The official language in Hydro is English. This means that all official documents, including various documentation in project work, are to be written in English. This does not mean that both verbal and written local languages are not used. In the verbal domain, the practical rule of thumb seems to be that whenever there are someone not speaking the "local" language present English is used. In terms of project work this is often the case. Thus I spoke to all non-Norwegian managers in English. When talking individually or in groups with only Norwegians present, Norwegian was used. This echoes the internal Hydro practices as well.

In terms of written exchanges, one project manager expressed for instance frustration that he received e-mails from Norwegians in Norwegian. In this way he could not easily forward them and include non-Norwegians in further exchanges. He tried to set an example with only replying to e-mails in English. Thus "informally" there are some translation issues for a Norwegian based "global" company. This was evident not the least in China. In recruiting managers it was thus a requirement to speak English. In practice that was a challenge, but those who spoke little English when hired quickly learned. So also here the use of an interpreter was seldom needed. When using quotes in the text they have thus either been assembled directly in English or translated from Norwegian. When there is something difficult to translate or express in Enlgish I have included the original Norwegian phrasing.

Abductive discovering

In light of these new methods, materials, people and places to study, ethnography is rather conceptualized as an eclectic pursuit and the "art of the possible". I also argue for anthropology as a dialogic arena for a unified science, a truly transdisciplinary discipline. Many of the authors referred to above want to downplay the widespread

fetishisized version of participant observation in anthropology, because it will restrict the possible objects of anthropological studies to an undesirable degree. In line with some of my earlier discussions on anthropological methodology (Røyrvik 1998), I argue here for an "abductive anthropology" of discovering, like some other anthropologists also have done (cf. Døving 2003). Somewhat different than other anthropological attempts at refunctioning abduction along the lines of Pierce's (1958) formal logical construction of the concept, I work from the notions developed by Bateson (1979). In this heritage, abduction may be perceived as several or multiple descriptions of some object or event or sequence (Bateson 1979: 143).

The objective of these descriptions is to try to get hold of resemblances between them, that is, resemblances derived through comparison of differences. Harries-Jones interpret abduction in this light as a "… means of undertaking formal comparisons through contrasts, ratios, divergences of form, and convergences" (1995: 177). He compared Bateson's techniques of abduction to those of identifying "resemblances" in terms of comparing Wittgensteinian "language games". In Bateson's view abduction is a process of modeling information that is characteristic both of the human species and of other creatures in their own environments. While abduction arguably is not as *comme il faut* or widely recognized as a formal logical form of inference as deduction and induction, Bateson still writes:

> "… metaphor, dream, parable, allegory, the whole of art, the whole of science, the whole of religion, the whole of poetry, totemism … the organisation of facts in comparative anatomy – all these are instances or aggregates of instances of abduction within the human mental sphere" (1979: 142).

Abduction appeals to the validity of one statement in order to make the terms of other statements necessarily true, and is therefore usually regarded as a method that yields tautology. According to formal logical principles, all verifiable reports should permit the test of causal links between the first and the subsequent statements. Tautological statements do not allow this possibility. However, as Harries-Jones notes:

> "[Bateson] … took the position that inductive science may abhor tautology, but nature does not… Tautology occurs in nature because nature does not think in either inductive or deductive terms. In natural contexts, the formal 'cause' of that which is necessary may be defined by that which is necessary. Thus successful adaptation may be defined by that which has adapted successfully, namely, a successful process of matching… Logicians' requirements for external validity are misleading, Bateson argued, because of their hidden supposition that 'truthfulness' only derives from external reality" (1995: 179).

The present descriptive analysis is, rather than an endeavor of inductive and deductive formal logical rigor, an abductive process of discovering the relations of reproduction of investment projects and their wider economic and cultural corollaries in contemporary capitalist conjunctures.

Tropes of trouble

It seemed I had to think it over again. As a matter fact, anthropologists today do study in modern, complex, capitalist, urban settings and investigate industrial places, bureaucracies, finance markets, and knowledge production in science and other organizations. Had the "specter of anthropology" already been exorcized? Was my feeling of uneasiness, after all, just subjective delusions? Is a brave world of "new ethnography" emerging, a multi-sited, multi-temporal and collaborative anecdotally based "para-ethnography", as it apparently seems to be, or should these "new" objects of study, and ways of studying them be considered as something else, something that after all is *not* ethnography and something which ultimately *not* constitutes legitimate anthropological objects? As Bate complains: "Organization anthropologists rarely take a toothbrush with them these days" (1997: 1150). Commonplace fieldwork he characterizes as "jet-plane" anthropology, and journeys into the "… organizational bush is often little more than a safe and closely chaperoned form of anthropological tourism" (ibid.). Above I have tried to give some of my own answers to these caricatured, but nevertheless somewhat pertinent charges.

However, the problems seem to be running even deeper than what has already been explored. Larsen (2006) analyzes anthropology, as he contend is the case with any discipline, as a specialized form of rhetorical "object construction practice" through four distinct phases. In all phases "the primitive" is the anthropological object *par excellence*; the primitive as 1) nature (both the savage and the noble savage), as 2) pre-rational, as 3) authentic, and 4) the lost primitive re-primitivized. Each phase emerges out of a rhetorical situation bringing forth its own classification mechanism. The scientific revolution de-animates nature and establishes the dominant categorical dichotomy of subject and object (mind and nature); the enlightenment adds the opposition between rationality and irrationality; and the industrial revolution institutionalizes the contrast between the authentic and the alienated (organic and mechanic). These dichotomies constitute on a fundamental level the relation between the knower and the known. The prototypical, and most legitimate, of anthropological objects are, thus, those phenomena we have evolved "away" from: "… ontological hierarchies, the analogue relationship between micro and macro-cosmos, magic, sacrificing, totemism, clan organization, animism, ancestor worship" (ibid.: 6, *my trans.*).

It is on this background we must understand the postcolonial discourse claiming that anthropological descriptions embody a historization of its object, confining it to the past, which in turn establishes a hierarchical asymmetry between knower and known. Thus "the primitive" as the exemplary anthropological object is taken hostage as the manifestation of the discipline's melancholic yearning for that which is lost, positioning *melancholy* as the ethos or feeling that singles out the anthropological object. Thus, Larsen concludes that: "… the lost is the prototypical object of anthropology. [The] desire for what is lost… attracts us to the authenticity from which we have become alienated in our attempts to gain reflexive control over it" (ibid.: 12, *my trans.*). We might say that the anthropological gaze is forever searching for the past in the presence, if it is on live, public display with "the most other of others" in remote and discrete geographical locations, or if it is hidden in small pockets of modern institutions.

The rhetorical devices embedded in our anthropological descriptions seem to deceive us, even in the post-colonial period, which supposedly has forever purged the asymmetrical relations and "pitch-helmet procedures of colonial ethnology".[57] When we spoke of "urgent anthropology" or now talk about "anthropology at home" (Jackson 1987), or "applied anthropology", or when, as I have in this chapter, "confessed" at doing multisited and multitemporal fieldwork, our language reinscribe the same basic categories and fundamental dichotomies we want to free ourselves from. Urgent anthropology implies something almost lost is really about to be extinct, anthropologists at home is recommended to employ defamiliarization techniques,[58] applied anthropology rests upon a notion of a "pure", romantically innocent, non-interventionist anthropology, and multisited and multitemporal fields and fieldwork presupposes the "ideal" field sites and field times. We do not speak of "singlesited" or "singletemporal" studies. The question of whether an anthropology without radical alterity (cf. Fagerlid 2005), rhetorically real, is possible still remains unresolved.

Resolve or beyond redemption?

After this exploration of the inherent constituents and constraints in the history of anthropological object construction, what then, seems to be the status and future prospects of ethnography in modern organizations?

First, ethnography was designed to study the negation of modern organizational and institutional phenomena. Elite, capitalist, urban, industrial management is the prototypical antithesis to the naturalist ideal of an anthropological "field". Thus, a Herculean task it is, indeed, to transform this upside-down, this projected "bad self", into a legitimate anthropological object of study. Such an assignment seem to be of such

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[57] Gupta and Ferguson (1997: 26) referring Geertz (1995: 105).
[58] Exotization practices in antropological studies of management is noted by Linstead (1997). Larsen writes that modern objects are prepared for the anthropological gaze in ways that make it appear *as* "primitive", and thus makes possible the "… discovering [of] magic at the factory, totemism in the bureaucracy… fetishes in the commodities, metaphors in marketing, and heaps of rituals hidden in all the instrumentality" (2006: 14, *my trans*).

gargantuan dimensions that we need to ask ourselves if it is feasible and worth pursuing at all. The situation leaves us with a few choices to make: to radicalize and paraphrase Abu-Lughods' call to "write against culture" (1991), we may write against the whole anthropological enterprise. Considering it as beyond redemption, we could discard naturalist anthropology as an inherently colonial form of representation (in chapter six and eleven I argue for a reorientation of anthropology along a somewhat different line in terms of a *radical* naturalism).

Another, more reformist approach, modeling the more modest attempts at "rethinking culture" (i.e. Borofsky 1994b; Barth 1994), is the option to redefine the content of the concepts of fieldwork and participant observation, thus implicitly also ethnography and anthropology. Related to the latter, one possibility is to acknowledge that neither certain places, certain peoples, nor the method of participant observation can serve as the savior or sole constituent for marking the territory of a uniform anthropology.

Anthropology and/or ethnography

A proposition that seems most urgent is to reinscribe the fundamental difference between anthropology and ethnography, as voiced for example by Timothy Ingold.[59] He draws on Radcliffe-Brown's distinction between ethnography as an ideographic practice of describing particularities, and anthropology, as a nomothetic science searching for general insights, laws and generalizations. Arguing for the reinvention of an anthropology with room for philosophy, an "outdoor philosophy", in the world, as it were, ontological reflection should be brought back into the anthropological enterprise. Then anthropology should be recast as a study *with*, not of. It could be perceived as both a way of knowing *and* being, and furthermore to ground knowing in being, an anthropology that educates our perception of the world, were theory and method come

[59] Timothy Ingold, "Anthropology is *not* Ethnography". Radcliffe-Brown Lecture in Social Anthropology, The British Academy, London, March 14, 2007.

together as arts and crafts and and where anthropology then comes to be seen more as a dream. As such it opens up rather than to closes, and is framed as a sideways glance. This resembles my argument above, of reinventing ethnography/anthropology as a form of para-ethnographic abductive discovering. For Ingold as well, ethnography as differentiated from anthropology, must be freed from its conceptualization as "method". In relation to the doing of an anthropology *with* others, then ethnography becomes a form of writing descriptions *of* the things that happen in the "field".

From the perspective of an anthropology and ethnography of organizations, an obvious path to follow is to let anthropology be anthropology, or more precisely let anthropology as a fetishised rhetorical construct be, and rather cultivate anthropology as "philosophy outdoors", enabled by a narrative oriented descriptive para-ethnography, tailor-made to the study of organizations, elites, complex capitalist corporations, and global institutions. Attempts at these kinds of reorientations I think has been going on in the "margins" of both anthropology and organization studies, some of which works has been referred to above (chapter one and two). In the emerging fields studying organizations from a knowledge practice perspective (i.e. Lave and Wenger 1991; Orr 1990; Orlikowski 2003; Nicolini, Gherardi and Yanow 2003) we can identify the seeds of a fruitful new reunification of anthropology and organization studies.

However, this "new" ethnography of organizations is still in its infancy. Hard work lies ahead to carve out viable approaches. We need to take Batteaus' words seriously: "A greater rigor of preparation, and a more thorough self-examination, will be required for organizational ethnographers if they are to approach the corporate and institutional worlds not as tourists or apologists but as interlocutors in a larger, shared drama of civilization" (2000: 737). As a recent re-examination of ethnography in relation to an anthropology of expertise and management of globalization states: "In our experience, ethnographers trained in the tradition of anthropology do not approach the study of formal institutions such as banks, bureaucracies, corporations, and state agencies with much confidence" (Holmes and Marcus 2005: 236). Yet, to engage in an anthropology of the contemporary, in a globalizing world, anthropology must do so. As

I have been arguing here, these investigative realms prompts a re-thinking of the "traditional informant", to the extent there ever was one, to a subjective collaborator and a counterpart rather than a more or less reified 'other'. Furthermore the ontological emphasis of *being* in this refunctioning of anthropology is advocated throughout the present thesis (see especially chapter six and eleven).

There are, of course, more or less hidden heterodoxies in the history of anthropology, if one rereads it. There could be alternative genres and inspirations still unexplored. Reading scholarly work on ethnographic research in anthropology, such as Ellen (1984), the limitations, the resilience and polymorph practices of participant observation and ethnography, as opposed to the fetishised, political and ideological version of the "received tradition" is outlined. An eclectic and opportunistic attitude must guide this pursuit, drawing upon tools from all available sources and disciplines, honoring the original transdisciplinary and "anarchic" outlook of anthropology. Philosophically this approach is possibly best described in Feyerabend's classic book "Against method" (1975). Our lead motives should be to unfold both interesting and problematic, fascinating and abominable phenomena, let the questions and curiosity light the way, and not be confined and castrated by subordination neither to methodological fetishes nor moralistic subject constraints. In his critique of the academy over 40 years ago Norman O. Brown noted: "This is what is meant by the so-called scientific method: so-called science is the attempt to democratize knowledge – the attempt to substitute method for insight, mediocrity for genius, by getting a shared operating procedure… But fools with tools are still fools…" (1991: 4).

In the new anthropological/ethnographic studies of modern institutional elites it is difficult to sustain a rhetoric that primitivizes the "other". The asymmetries are to some degree turned upside-down, in such a way that the subject matter coerces our descriptions away from the objectifying languages of the rhetorics of colonial discourse. In these studies there is thus a discursive fight between two different forms of hegemonic language that could prove fruitful in modifying the rhetorical object construction practices of both anthropology at large and ethnographic organization

studies. If we agree with Larsen (op. cit.), that we have witnessed a shift from objectifying to subjectifying languages on a large scale (in relation to the oriental, the primitive, to woman, children, and the mentally ill), this is a result of a broad decolonization of the world. The "other" has increasingly become an agent, a fellow subject independent of our representations. And in conjunction with this process of independence, our descriptions changes form. While we await the total, and arguably utopian, decolonization of the world, there is a major self-reflexive mission in the studies of modern elites, a great opportunity of dethroning and transforming the rhetorical heroism of primitivisation. Into what remains to be seen, a broader realization of Fabian's (1983) hope for a coeval dialectical anthropology is still unfulfilled, although new languages have potentials that could possibly benefit also other subjects of study.

Likewise, in the "new" ethnography it is difficult to sustain the idea of relatively stable and isolated local communities of place. As described above, my own solution has been to interpret the field in which I have been investigating primarily not in terms of sites but in terms of flows. I have been exploring in a time-space of "fieldflows" were the curiosity concerning the culture of expertise and elite phenomena of managing in bringing forth projects of capitalist industrial production has been the "Leitmotiv", and the relationships gained and sustained through fieldwork have been my guides.

Nevertheless, a reinvented ethnography, one that enable an anthropology as "philosophy outdoors", I believe, must continue a tradition were the universal and the particular need not be opposed (Hart, op. cit.), and which combines the wise and the concrete, summarized nicely in Bloch's characterization of his book "From blessing to violence":

> "It is, therefore, both a theoretical book, in that it poses general conclusions, and also a book about specific events in specific places at specific times. This hybrid nature has been characteristic of anthropology since the time of Malinowski and Radcliffe-Brown and has, I believe, been one of its strengths, enabling it to avoid the empty platitudes 'pure' theory often means and the pointless particularity of some recent studies" (1986: 2).

A last resort

As I wrote the draft of this chapter I did not have the full overview of where the research discovering process would lead me. Thus I contemplated that if all efforts to render my management field legitimate after all would fail, I could surely, as a last resort, consciously apply some of the rhetorical devices I had learned that so far had constituted legitimate anthropological object construction, through primitivisation and re-primitivisation. Thus, to receive the blessed seal of an "ethnographical work of anthropology", I figured somewhat ironically that it could have been a tempting refuge to open my thesis in this kind of fashion, but as the result came into view it never needed to be realized:

> "The Hydrants, as is their preferred self-designation, is a relatively modest community of approximately 30 000 people living scattered in small enclaves on all continents of the world, often at the outskirts of both urban centers and in rural areas. Although their primary modes of production employ highly sophisticated technologies, their main medium through which they disseminate their knowledge tradition is still verbal communication. The specialization of their communities has reached such a complex level that they do not provide their own subsistence, but are dependant upon monetary based transactions with their surrounding societies. They have gathered a substantial corpus of ideas and assertions about aspects of the world, which they ingeniously apply to their advantage, and, as their myths proclaim to be their purpose on earth, to improve the human condition. Even if their history can be traced only a hundred years back through written records, they possess an impressive apparatus of representation and self-presentation, and their cultural tradition is transmitted through a well-institutionalized social organization. Although being excessively future oriented, the accumulated wisdom which they treasure the most is preserved by an epistemology of secrecy, guarded

firmly by gatekeepers, procedures, and formal and symbolic constraints, and is passed on through a series of complex rituals, codes of cultural reproduction and opaque forms of leadership succession. Although being a small minority in all of the wider communities in which they dwell, their power and influence in forming their societies are substantial."

Chapter Four

4. Mesmerizing Methodology: Narrative Knowledge and Anthropology Engaged

'Science' is not a method; it is a form of wonder.
(Roy Jacques 1996: 18)

The linguistic philosophy, which cares only about language, and not about the world, is like the boy who preferred the clock without the pendulum, because, although it no longer told the time, it went more easily than before and at a more exhilarating pace.
(Bertrand Russell, Foreword to Gellner 1959: XIV).

Returning from fieldwork, most researchers would possibly recognize the feeling of ending up with enormous material, but with a lack of confidence on how to shape it into something that can be judged as scholarly work. The perception of being snowed under in all the material, at least up to the waist, of all the information, input, fragmentary insights, the kaleidoscope of unique people and lives, values and moral. Feelings that simply build up in the poor researcher like a Babelian tower. Very seldom the student or the scientist have a problem with too little material. Rather to the contrary, the danger is "death by data asphyxiation", as Pettigrew puts it (referred in Eisenhardt 1991:540). You have been exploring and investigating the world, gathered piles of amazing material, even possibly some real treasures, things that veritably screams to be communicated to the world. But the overwhelming complexity, the respect for the task you have assigned to yourself, the humility towards all that has received and welcomed you, and conveyed their life-experience, their working-experience, offered you their thoughts and emotions, it all makes you feel somewhat insignificant.

You have lived and soared, taken part in collective human spheres you never have participated in before, gotten new acknowledgements, found out new things about yourself and others, become "high" on research life. Action. Dynamics. Intensity. And now you sit there. All that you have experienced, that in intimate ways has been conferred in your custody, and now this whirlwind of yours and others experiences is suddenly going to be transformed into science! What do they imagine? The literature on qualitative method is certainly insufficient, and a lot of the studies you have read have an immense gap between the data and the conclusions drawn. What do they expect? How do you get on from here? What magic tools do others have at their disposal?

That is sort of how I felt, after completing the fieldwork for my master degree in social anthropology, a fantastic stay among the Roma in Bulgaria. My fingers drumming on the keyboard and on various notebooks, and my head at the same time buried in mountains of scientific literature. Because it is not only the empirical material you (think) you have captured that is going to be made into science, it is also going to

be shaped to match the most important and best scientific literature in your field of study. A formidable task. I climbed in panting over my little Himalaya.

In this chapter I outline a "narrative modality" upon which my para-ethnography is partly constituted both as a form of knowing and being in anthropology, and as form of writing ethnography from the "field". The focus is the use of the anecdotal and of storytelling, or narratives, as an entrance and idiom of communication in qualitative social science in general, but especially in anthropology. I will as empirical exemplifications use the development and especially the processing and the communication of the material that has been gathered through a long series of Sintef research projects under the headline of "learning histories". This approach was also used to in the Sintef-Hydro research project related to the start-up of the plant in Azucueca (see especially chapter six).

Although most of the empirical material in the present study has not been assembled as learning histories, I use the learning history methodology, and the example from Azuqueca, to illustrate more general points of interest both to narrative approaches and ethnography more in general. Major other parts of the ethnographic material utilized in the present study are also both monologue and conversational "stories" and presented as narratives. Illustrative examples are the sections labeled "Blåruss-blues" and "Decision Gate Four". Thus the narrative approach to "para-ethnography" and anthropology as advocated in the present chapter does not only apply to the single learning history example, but to major parts of the ethnographic material.

Learning histories projects have been carried out in many of different organizations, both in the public and the private sector since 1999. The lessons learned and insights gained are manifold and various. Different aspects of this work are well documented in several publications.[60] The projects were conducted in transdisciplinary research teams of minimum two people and in tight collaboration with the participating organizations. In some cases the learning histories were co-written by members of the

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[60] See Bygdås, Røyrvik and Hatling (2000a, 2000b); Hatling (ed.) (2001); Røyrvik (2002); Røyrvik and Bygdås (2003, 2004); Røyrvik and Wulff (2002, 2004).

organization, and in all cases the participating organizations were actively involved in the development process of the learning history. And also, in all cases the projects and the histories were intentionally co-created by the research-team and organization for some explicit purpose, be it to learn from previous industrial plant start-up projects, like the case was in Hydro, to disseminate organizational knowledge, or to enable cultural integration in a post-merger situation of an expanding engineering consultancy firm. Thus, the learning histories, as illustrated in the present chapter, may serve as an example of anthropology in participative and practical contexts of organizational use and usefulness.

The main focus in the reflexive review here is the challenges and dilemma's connected to the processing and structuring of the "pool of material" and the fashioning of the learning histories into "finished products", as an example of a narrative approach to qualitative methodology. This aspect of the learning histories is not sufficiently covered in earlier publications. These topics are neither exhaustively discussed in the recently assembled relatively extensive literature on qualitative methods. There is a lot of focus on research preparations and the techniques of gathering, but radically less on the processing and construction afterwards. And uncontroversially, there exist no universal, objective and ready-made answers in this realm. Even if we compare, as Latour does (2005), the write-up process in the social sciences with the laboratory of the social sciences. Some rules and conventions exist, but even here they seem operate on astonishingly implicit levels within the research collectives.

The learning histories can illustrate many of the dimensions and aspects of this complex processing work. I will therefore through examples drawn from the learning histories projects illustrate some of the choices, principles and last but not least dilemma's you face in the processing phase, rather than trying to inscribe simple recipes in stone tablets. As such they illustrate as noted above practical examples of the "para-ethnographic" approach discussed in the previous chapter, and again, the para-ethnographic emphasis on the *anecdotal* is translated here into a *narrative* orientation.

Narrative knowledge

After the French wave in the seventies, which prompted the post-modern or post-structuralist "rebellion" against modernism, that which more or less interchangeably has been called the narrative turn, the language turn, the literary turn or the performative turn got a foothold in the social sciences in the eighties. [61] The wave has brought about various implications, on the one hand a nearly masochistic critical distance to the conditions of the researchers own knowledge, leading in some cases the full stop of the research and writing process, to, on the other hand, a healthy reflection on the particularities of the social sciences and the arts. This larger background is too extensive to discuss in-depth here, but a brief summary of some of the main points of the narrative approach in the social science's might be appropriate.

Through the literary turn, in addition to the French, researchers like Geertz, Bruner, Marcus, McClosky and Czarniawska have tried to bring narrative knowledge into the science's conversation as legitimate knowledge. As Lyotard (1986) pointed out, the modern, western scientifically legitimate knowledge rests on the sharp distinction towards the "everyday knowledge" of "ordinary people" (whoever they are) – a knowledge that can be considered as narratives about people's projects and their consequences as they unfold in time (Czarniawska 1998). But as Bruner, Barthes, Fisher and others points out, the narrative can be regarded as the main mode of knowledge about people and communication. Narratives can be seen as omnipresent. They express themselves through language, pictures and gestures. We find them in newspapers, on the television, in conversations, myths and fables, in photography's and paintings, films and comics. Shakespeare said that "stories are the stuff that dreams are made of". But there is even more to it than that. As Rapport and Overing (2000: 283) sum up; the human being can not only dream in narratives, but also daydream, believe and doubt,

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[61] By well known academics such as Foucault, Lyotard, Baudrillard, Derrida, Paul de Man, Deleuze and Ricoeur. In addition, inspiration has been taken from linguistic philosophy (now under the name of "analytical philosophy") in Oxford and Cambridge following World War II, led by names such as G. Ryle, J. L. Austin og L. Wittgenstein. This is a school of thought sought demolished by Ernest Gellner accusing it of "conspicuous triviality" in 1959 [2005].

plan, gossip, restructure, remember, expect, learn, hope, despair, create, criticize, hate and love through narratives. And as a well-known quotation from Roland Barthes describes the human being as a "narrating animal":

> "[N]arrative is present in every age, in every place, in every society; it begins with the very history of mankind and there nowhere is nor has been a people without narrative. All classes, all human groups, have their narratives… narrative is international, transhistorical, transcultural: it is simply there, like life itself" (1977: 79).

Many definitions of the conception of narrative exist, and for example Barthes says that there are only formal and not substantial constraints of the narrative (1972). In this perspective all forms of communication can become narrative. A more narrow definition can be taken from Kerby (1991), where the narrative is seen as a way of representing a series of temporal occurrences in a way that communicates meaningful sequences, the narrations as a story or the plot. A related definition is that the narrative demands at least three elements, an original condition, action or event, and a following condition, bound together by a plot that often is chronological (Czarniawska 1998). It is frequently this sequensiality that separates the narrative from other forms of communication of information and knowledge, as for example theoretical abstraction, the instantaneousness of feelings, the simultaneousness of the senses, the mechanisms of the metaphors and the firmness of models (cf. Rapport and Overing 2000).

Several attempts to bring together narrative and scholarly knowledge has been tried, from Giambattista Vico in the seventeenth century, to the Chicago-school in sociology and philosophy; of Kuhn, MacIntyre and Rorty, to anthropologists such as Clifford Geertz, to economics as McClosky who has analyzed modern economical science practice in narrative terms. For example Geertz created the famous expression "faction" that in a certain way describes the social sciences (and in this particular case anthropology) as a combination of "fact" and "fiction"; as "… imaginative writing about real people in real places at real times – where the 'imaginative' and the 'imagined' need not to be confused with the 'imaginary', the 'fictional' with the 'false', or the 'made-out' with the 'made-up'" (quoted in Rapport and Overing 2000: 240). The

expression thematizes the relationship between different genres of representations and disturbs a "freezed" relationship between different scientific disciplines (ibid.: 241).

Research on "organizational story og storytelling" has been a part of the agenda in organization studies since the 1970's with Clark (1972) using it mainly as a medium of reporting, as "tales from the field" to paraphrase Van Maanen (1988); and Mitroff and Kilmann's (1975) discussion of "the stories managers tell" as an approach to problem solving and action research ("tales of the field"). It was not, however, until the mid eighties that storytelling started to enter highly ranked journals and mainstream theory, thus being realised as a legitimate topic in organization studies (cf. Martin 1982; Martin et al. 1983). Later we have seen a "narrative turn" on several different issues within studies of organizations, for example as an approach to organization studies (Czarniawska 1998), the focus on *organizational symbolism* (Pondy et. al. 1983), and the *"metaphorical basis of knowledge*" (Morgan 1986; McClosky 1986, 1990); as an approach to *"revitalizing" organizations* (McWhinney and Battista 1988), and the *socialising of new employees* (Louis 1980); on *collaborative engineering work* (Orr 1996) and *"sense-making"* (Weick 1995); on *organizational learning* (Roth and Kleiner 1998), *strategic work* (Barry and Elmes 1997), *innovation and product development* (Buckler and Zien 1996), and as noted above a *narrative take on economy itself* (McClosky 1986, 1990). In this field titles like "The story-telling organization" (Boje 1991) and "Narrating the organization" (Czarniawska 1997) has emerged, focusing respectively on sensemaking, and *institutional drama and identity*.

Some recurring themes that Boyce (1996) found in his review were the use of shared stories for expressing members experiences and confirming shared meaning between individuals or groups; orientation and socialization of new members; stories used as supplying and changing members understanding of organizational realities and as developing and renewing the apprehension of organizational goals among participants, and likwise in preparing groups for plans, implementations and descision making in relation to goals; and finally, the use of stories related to the co-creation of organizational visions and strategies. Instrumentally, storytelling in organizations has

furthermore been identified as a means to share norms and values, develop trust and commitment, the sharing of tacit knowledge and to generate emotional connection (cf. Denning 2000).

Thanks to authors and research streams like the ones mentioned above it seems to be a general agreement that scientific knowledge also is based on metaphors, however, "narratives" still remains "a problem" judged by the ideal of the natural sciences. Lyotard (op. cit.) claimed as a critique against this ideal that scientific knowledge was based on meta-narratives. In the literature on qualitative science the value of the narrative versus theoretical conceptions and models has been widely discussed. With Eisenhardt (1991) one can say that this is a misleading opposition. As we will return to below, the credo of interpretative science is precisely the reflexive iteration between theory and empirical realities (narrative or in other forms). But a narrative approach will most likely lead you to do a great deal of different choices both in the gathering of data, and in the processing and communication of the research.

A major qualification needs to be addressed at this point. The perspective advocated here does not voice for some of the alleged "post-structuralistic excesses", like any contempt of the "traditional" sciences and assertions like "everything is text", "social life is language" etc. Latour for example emphatically distances himself from such claims when asserting that: "Even though constructivism was for us a synonym for an *increase* in realism, we were feted by our colleagues in social critique as having shown at last that 'even science is bunk'!" (2005: 92). That for example Law (2002) might be accused of some forms of post-modern excesses should be rather uncontroversial (cf. Schatzberg 2004).

The "languification" of fields like technology, nature, the body, emotions and sexuality is professionally uninformed, and with Paglia (1992) we agree that substantial amounts of these positions are positively idiotic. As Gellner (1993) and many others establishes, knowledge beyond both language and culture is possible. From research on deaf-mutes and pre-linguistic children in cognitive science (Bloch 1991), and cultural traditions without written language and with limited use of verbal language (cf. Barth

1975; Wikan 1992), we know that humans can think conceptually and act meaningfully without any use of language, and that a lot, probably most of our knowledge, operates on non-linguistic terms as cognitive schemata that is not even organized ”as language”, as argued by for example Bloch (op. cit.). Today we can see that the post-modern and the literary turn is, or should be, more a matter of different emphasis than a total change of traditional ways of thinking social science and the arts. We will examine some of these differentially stressed aspects in the following. In chapter six a new form of unification between post-modern insights and advances in the natural sciences, especially physics, with implications for all of the sciences is outlined.

The present chapter is further organized, inspired by Bate (1997), such that we first look at the narrative approach to an anthropology-in-action methodology in the light of 1) the quality of presence, then 2) the significance of mundaniety and ordinariness, followed by 3) the value of plurality and richness in descriptions, 4) the importance of rhetorical tropes in a good composition, and finally 5) the importance of a point and a ”punch line” to enable the narrative method become theory developing, as something more than ”just” storytelling.

Straight to the bone: the quality of presence

The starting point for the first learning history research project conducted by collegueas and myself in Sintef, was an assignment from Norway’s Research Council. They wanted an evaluation that was *not* an evaluation in traditional terms. The Research Council funds many different programs and initiatives to stimulate and increase the innovation rate in business organizations, and among those increased use of research and new technology. They are therefore interested in learning as much as possible about the effect of these programs, so that the measures can be improved and hopefully the programs become better. The principal in the Research Council had made the experience that many of the earlier evaluations became too general, so general that it was difficult to extract useful knowledge, knowledge that could trigger wise actions.

The result became five learning histories from five different enterprises where all had experiences with the state's apparatus of innovation measures and different research institutions (Bygdås, Hatling and Røyrvik 2000a). In addition we wrote a short report on method, where principals and choices in the development of the method was described (Bygdås, Hatling og Røyrvik 2000b).

The project was built upon some fundamental and simple ideas taken from insights on how people learn and communicate knowledge in social interaction. We focused especially on the point that we learn through practical experiences and actions, and also through inferences we draw from stories, accounts and other types of examples we take in our possession. Assumptions were also that we teach knowledge through common practices and communication of narratives of different sorts, both in informal and formal settings. The model of learning and knowledge exchange was heavily influenced by the perspectives of "communities-of-practice" (cf. Lave and Wenger 1991). With this point of departure we tried to form the learning histories as naturalistic and "close to reality" as possible. The ethnographic ideal of *presence* was a fundamental guiding principle for the work.

We wanted to communicate living experiences and knowledge from living persons with bodies, minds and emotions in the enterprises. Far away from the often abstract and general language in evaluations and reports, a language that longs for universality, neutrality and objectivity, and which pretends to be the invisible omniscient. We wanted to do it in a way that captured the lessons learned as close to people's intentions as possible, and further let them be transmitted in ways that captured interest and curiosity among the receivers/reader/users. A credo in the project was therefore that "it doesn't have to be boring to be serious." In the same vein Camille Paglia writes:

> "Good writing and teaching require a creative sense of play. In American academe, as opposed to Great Britain, playfulness and humor, as well I know, are suspect, suggesting you aren't "serious" enough. But comedy is a sign of balanced perspective on life and thought. Humorlessness should be grounds for dismissal" (1992: 237).

She adds reassuringly: “Eccentric individualism, in the style of the old German scholars, must be tolerated” (ibid.).

As the principal method of processing the material from the interviews, we wanted to use stories, examples and anecdotes from the “informants” in a way that did not wash away all the explosive force, humor and energy. One choice was therefore to use a lot of direct quotes from the interviewed, as orally as possible, but editing enough to making it not look stupid. We used “the two-column” format, developed by Roth and Kleiner (1998), where the original idea of the learning histories was adopted from, a format where direct quotes is placed on the right side and comments and considerations from the researchers on the left side. Even if the two-column format worked excellent for our purpose, it is probably more important to discuss the connection between the oral and other aspects of the quality of presence.

Here we run into the classical problem of translation. Like anthropologists and other social scientists struggle with understanding of the language, illustrated by for example Barley’s problems with the Dawayoes language in Cameroon: “”Excuse me”, I said, ”I am cooking some meat”. At least that was what I had intended to say; owing to tonal error I declared to an astonished audience, ”Excuse me. I am copulating with the blacksmith”” (referred in Bate 1997: 1164). We also had encounters with the challenges of translations between different forms of epistemologies that is not based on language and which have to be communicated and instantiated in oral or written language, and then the additional problem for the scientist, the translation between speech and writing.

In a famous Norwegian interview Niels Christian Geelmuyden[62] wrote direct quotes of what the prime minister of Norway at the time, Gro Harlem Brundtland, said. She reacted harshly when she saw the result afterwards. It put her ability to communicate in a pretty unfavorable light. This does not just say something about Brundtland, and arguably also Geelmuyden, but also something about the borders between oral and written language.

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[62] Done for the Norwegian popular culture magazine “Det Nye” in 1993. It was later published in his book “Ærlighetens komedie: portrettdrama i 28 akter”, Huitfeldt (1998).

One of the problems with the processing of large qualitative material into (scientific and other forms of) text is the tremendous work of translation between different types of language. The empirical material is often gathered through oral tools, either through transcripts of interviews, which was the main technique in this first learning history project, or by oral deliveries of other sorts, quickly scribbled down in notebooks. Then the material through your intellectual grind is going to be transformed into knowledge in a linear, written language. In the learning histories, as well as the other narrative material presented in this thesis, I have wanted to use the force of the oral language; the concrete, juicy, goal oriented, the alive, emotional and personal touch the oral language can possess. Therefore the material presented is full of anecdotes and quotations. The stories carry voices and intentions in a different way than the ”washed” “written” language often does. Sometimes the learning histories projects hit the mark in the mixture of the written commentary-language (in the left side column), and the “oral” quotations (in the right side column), and sometimes they did not. And it is not at all that the quality increases proportionally with the number of direct oral quotations.

Sometimes some informants reacted the same way as Gro Harlem Brundtland when they commented on their own quotations. In one of the first five stories we had to make the informants anonymous because of this. That it was only one is in a way surprising, because the stories were designed to engage and even provoke. That said, in a tone of voice with respect and an effort of taking people seriously as a baseline. I will return to this later. Surprising was also the fact that there was little connection between the possible explosive force of the quotations, and how ”stupid” they might be perceived, on the one hand, and with how big a “Brundtland-factor” the interviewee reacted on the other hand, when they saw it written up on white paper later on. Resistance, consternation and aggression towards the conveyed depend on a lot of things, among others the personality of the people, cultural traits and the atmosphere of authority in the organization or the general arena that is studied. Nevertheless, a related challenge is to communicate “dynamite” without turning it into futile gossip, talking behind others backs or overemphasizing exotic but unimportant issues. These

considerations have been highly present throughout the entire fieldwork for the present thesis.

In addition the absence of anonymization is an issue. Briefly told, in the learning histories and ideal was to try to avoid making people anonymous to maximize the "authenticity" of the stories. This was of course related to the fact that the stories were to be used internally in the various organizations, and when publishing excerpts from them openly for example in the research community they were always anonymized. The ambition was to communicate real people and real events in a way that was as direct, "raw" and unmasked and as possible. In my dissertation work all persons, except the President and CEO of Hydro Eivind Reiten has been anonymized. The authenticity ambition is of course to some extent "naïve and impossible", but nevertheless it was one of the ideals. It is maybe paradoxical but the learning histories had the "opposite" ideal as well, a want to use rhetorical strategies and tropes from literature and film in a way that emphasized the points and put things slightly on the edge. More about this in paragraph four.

Another aspect of the quality of presence is the presence of the scientist. Ethnography and narrative methods legitimacy rests on the fact that the reader perceives that the researcher has insights and knowledge that undoubtedly shows that s/he "was present", and has participated in situations and events that is described and gathered other types of insightful accounts that the descriptions have been drawn from. This first person observation can be shown in a variety of ways. A common way is to write a separate chapter or paragraph about the method, where the author lays the cards on the table, as it were, and shows which premises and methods the findings are based on, and thereafter the author becomes invisible in the subsequent text. This is a common strategy that is traditionally applauded by the academic community, which often aims for the most neutral tone as possible in the texts.

With postmodernism and the narrative turn it has been focused on the author and the researcher as a "positioned subject" in both the gatherings of the data and in the presentation of the findings. The main point is simple. As a scientist you do not have

any “tabula rasa” and can neither gather information and present knowledge as if it was independent of your cognitive schemes and cultural codes. We ask questions and are critical to all guarantors of truth, including one self. Many texts, also in anthropology, have therefore developed into using a lot of time and space to give an account of their own position in the field they study. One might say that that was exactly what I did in the previous chapter, but it was done also with the aim of discussing issues of more general relevance to anthropology and ethnography.

Some of this is obviously necessary and important, but today we can see that a lot of the self-critique and crisis of legitimacy it has led to in the social sciences, has been more masochistic and traumatizing than constructive. It may lead to the result of an endless regress making it impossible for the researcher to declare something positive about anything. As we will see in the final paragraph of this chapter this dismal situation is much caused by the confusion of the criteria’s for what is justified as good, legitimate and valid social science.

In the learning history projects a third way to solve the problem of showing the presence of the researcher was sought. It was inspired by the report genre in journalism. More specifically we borrowed some elements from the gonzo genre. The word “gonzo” is slang for “wild” and “crazy”, and some say it derives from the Italian word for “naïve”. The notion of “gonzo-journalism” started in the 1960’s, and designated articles by the (in)famous and recently passed away Dr. Hunter S. Thompson. He was a provocateur that broke the boundaries of how journalists should behave and report. He was immensely subjective and funny without being “funny”. The new thing about Thompson’s method was not just the fashion of writing, but also how he behaved in the environments he described. He was a participating observer, so participating in fact that it nearly cost him his life during his research for the book “Hell’s Angels (1996).[63]

The breakthrough for gonzo-journalism came in the report series from the American election in 1972, which was publicized in the magazine Rolling Stone and

[63] See Nielsen (1996) for examples of anthropological research and fieldwork that can be directly life threatening.

later on came in book form. Thompson went to the task with a deep disgust for the way elections earlier had been covered. He wanted to avoid the loyalty bonds between politicians and journalists, and did not want to follow the established rules of the game. He went to the task for two reasons, he writes:

> (1) to learn as much as possible about the mechanics and realities of a presidential campaign, and (2) to write about it in the same way I'd write about anything else – as close to the bone as I could get, and to hell with the consequences (Thompson 1973: 18).

Among some academics, at least informally, the book is considered the best work ever made in political science. Thompson made a revolution in how "research" can bring forward empirical material, and how it is presented. Thompson shows his position without "excusing" himself. Rather to the opposite. In a direct, non-conceited and unadulterated way he openly shows the whole "process of research", without putting boundaries on what he feels and can express. This way the text has the power and potency to engage the reader in a way that takes us on a fantastic journey in the landscapes of political elections.

In the learning histories it was tried to show the researchers participation and presence in some of the same "direct" and "raw" or "uninterpreted" ways, although the "gonzo-factor" was relatively humble compared with the works of Dr. Thompson. In the present work this "direct" presence and participation of the researcher is clearly illustrated for example in the narrative ethnographic material presented in chapter six ("The ambience of enabling") and in the sections "Descision Gate Four" and "Blåruss-blues" in chapter seven.

A trivial pursuit?

Close to the qualities of presence in narrative research we find the value of the trivial, the mundane, or the importance of the "ordinary". But what is this value? The credibility of a lot of qualitative research depends on the ability to penetrate "the intimacy of life" (Latour and Woolgar 1979: 17), and that is where the main agenda lies; namely to explore the "ordinary" systems of knowledge, meaning, communicative

interaction and power. One of the arguments for this need for ”intimacy” is that the study of process and change is difficult to carry out without. To be able to describe and understand the complexity in society and the dynamics of change, the fine mechanisms has to be studied in close detail. And it is difficult beforehand to know both where they are and how they work.

Through the tour de force of trivialities in good qualitative texts a robustness is produced and a credibility in the research material is forged that hardly can be replaced. With concrete examples and illustrations of the daily life’s ”raw realities” told as naturalistic and un-constructed as possible, also gives way to a special opportunity to thematize theoretical and general issues in a manner that the readers can recognize and translate into their own realities. There is, however, a caveat. An overabundance of details can be too much. You can drown in facts that does not seem to have anything to do with the original theme. The question is therefore which type of details you should keep and focus on. A general rule apart from ”the necessary facts” are details that describes things that to some degree will surprise the reader, astonish the reader, at least to some extent.

Ambitions of only wanting to describe revolutionary discoveries can however not lead to anything but blockages in the writing process. But a focus on events and descriptions that you think are relatively new and unexpected should be a criteria for the selection and effort to make the material interesting both for the author and the reader.

What we are more up to here is the interpreting science’s principle about contextualization. Briefly it is a way to convey a critical discussion of the social and historical background providing the basis for the study, which gives the reader a picture of how the contemporary situation in your field of research has become the way it has become. It is a necessity to give the reader enough background information to be able to assess the premises the study is based on. Regarding the specific approach to a narrative oriented social science that was called “learning histories”, and which only constitutes a portion of the corpus of narrative oriented ethnographic material presented in the present thesis (and which again only constitutes a portion of the total sum of

ethnographic material presented), it was because of limited space and other specifications due to its particular use requirements, used much too little time and space for contextualization than "ideally". The stories were not meant to be singular qualitative studies either. They were experiments in methodology and research communication, exploring with several of the "principles" of qualitative studies.

To sum up we can say that details and apparent trivialities can give weight and credibility to qualitative texts and thereby deliver insights in social life that are valuable for many purposes. For example "Guns and rain" (Lan 1985) is an example of a monograph that has the ability to combine richness of detail and the trivialities of the ordinary with a focus on what is engaging and interesting. What such texts have in common is combining the ability to communicate exiting stories, and simultaneously to generate and thematize theory and knowledge of both scholarly and common interest.

Polyphony and polysemy: rich descriptions

One of the challenges with different forms of evaluations, which was the starting point for the first learning histories project conducted by Sintef, is *who* the lessons comes from. The principle with both informants and researchers as differently positioned subjects in the field is something that has been strongly emphasized in post-modern literature. Under these circumstances it implies in our context that different individuals learn different things, also when they participate in the same type of activities and actions, and emphasizes and communicate them differently with different types of tools and sorts of effects. In the learning histories we therefore tried to capture some of these plural learning's and communicate them from the different subjects perspective. This in line with the principles of polyphony which inspired Bakhtin's (among others) description of Dostoyevsky's style of writing. The approach invited most of the relevant voices other than the researchers voice to express themselves directly in the finished stories. The researcher as author tried to take one step back to give more space for other voices and perspectives. Therefore a lot of direct quotations from the informants were

used, but also direct quotes from the researchers, though less than the other participants. But on the other hand the researchers voices were used a lot to contextualize the different statements.

It is an extensive task to generate constructs and themes to analyze from the empirical data that is gathered. In the learning histories we wanted to organize the narrative both as "stories" but also tried around these concepts and themes. Several spirals in the hermeneutical circle were carried out. The principle of the hermeneutical circle can for the social sciences in light version be described as a dialogical process of reflection, where the research-process goes forward by spirals of interpretation between the relevant empirical findings and theoretical ideas, models and schemes. When transcription of all the material was done, everything was processed with a very loose system of coding. Statements and paragraphs had to be labeled with different codes according to what they conveyed. This is not difficult, but deals with how you put labels on what the different informants talk about. If you use an interviewing guide, the codes often has a lot to do with the categories in the guide, but you will always need new ones. With more semi-structured and informal interviews the coding will be even more open-ended.

This is a job that takes time, but it is very decisive. The work is of the type: "here he talks about conflicts with the managers", "here it is about problems with the IT-system", "this is about the body as a tool", "this is about technological innovation", etc. The material has to be examined closely and labeled thoroughly. The same passages can be labeled with several key words. Because the mode often is narrative they can contain several themes and "points". More and more social scientists use IT-programs to order empirical material. These programs can be a tremendous advantage especially if you have a huge material where you easily may loose track and oversight.

Neither with the learning histories nor for the rest of the material for this thesis has a computer program been used, and the result has been often to end up with paper all over the floor, again and again, when based on the labels and codes trying to look for emerging patterns and the most important and repetitive themes. For the learning

histories we drew maps thematically with arrows and boxes and connections. When we partly agreed on which themes that was the most significant we started the work with sorting out quotes and passages according to the theme. We wanted to organize the learning histories both in chronological and thematic order. We used a metaphor from films about the organization of the stories. They should be both "Hollywood-film" and "modernistic film". From the Hollywood-film we were inspired by the chronological orientation, exposition, build up of tension, personification. Modernistic film is often organized according to certain themes, so here we borrowed a complementary theme organization of the stories. In addition modern film is known as self-reflexive towards its own mode of expression, and this inspired the learning histories as well.

This illustrates the dilemmas with production of qualitatively based texts in the social sciences. Some would say that chronological order is the stairway to heaven. That the author writes up the insights in the order they were "discovered". This way the findings will seem more truthful, they claim. Organized by theme you "trick" with the timeline in the research project. It is important to emphasize that the research process and the research product is two different things, they have to be judged separately. Even if the order is "conjured", as organized by theme you can get an even more truthful result (Nielsen 1996).

An interesting reflection is that chronological order appeals both to the natural sciences ideal, where experiments in labs demands painstaking step-by-step descriptions, and also to the classical narrative structure template with a beginning, a middle, and a closing. Organization by theme, which is in extensive use in the social sciences, is therefore in tension both with the natural sciences and parts of the literary ideal. To try to get the "best from both worlds" we therefore chose a combination of the two in the learning histories. With its overemphasis on analysis the social sciences, anthropology in this case, has received critique for bringing in important elements from two scientific "worlds" for in the next instance bringing them together rather unwisely (Hylland-Eriksen 2006). A natural science ideal characterizes the lack of engaging narratives in anthropological descriptions, while a social science ideal on analytical

complexity remains. The result is often far from engaging anthropological texts, and a sultry reader role.

Each theme in the learning histories, which often is centered around one central issue or "dilemma" (Røyrvik and Wulff 2004), became one chapter in the story. Each chapter had its own introduction that put into context the polyphonic story that followed. Also each chapter had a closing that in a special manner, which we will show later, summed up some of the themes in the chapter. A formidable work was put into sorting and picking quotes that reflected and discussed the chosen theme in a good way. Many considerations play a part here. You had to have a respect for the informants and not put them in a bad light by picking out too "journalistically" chosen quotes. The consideration of relevance counts a lot. At the same time it has to be in accordance with the intentions from the sender to what is told, and in accordance with the "direction" the material all together points towards.

A lot of choices have to be made. You have to be faithful towards the empirical material and insights, towards practice and the theoretical ambition that the illustrations are supposed to say something about. One important thing here is that in the spirals of interpretation that worked the best, the themes that stands and gets illustrated in the end, are not the same ones that we were certain of when the process started. It is also necessary to go deep enough in the material and have enough rounds of interpretation and re-interpretation spirals, be in a long enough process of doubt, ambivalence, and confusion before everything "falls into place".

In these types of iterations and interpretation spirals, where the purpose is to find and squeeze out the central themes, it is an advantage to be more than one researcher involved. The material can often be extensive, and it can be hard to get through and manage to point out patterns and common features. In the Sintef learning histories research projects we were at least two people in the field and in the work of interpretation and analysis. Only one project was carried through from beginning to end by one researcher (myself). Alluding to the discussion in the previous chapter, when the ideal in the social sciences research still is the lonely hero that fights the material all by

himself, it is often difficult to multiply the researchers in the gathering of information. In the rounds of interpretation it should be easier to pull in others as reflective partners for your own interpretations. They can contribute with important doubt to your most solid interpretations and support reflections and beliefs where you are uncertain yourself. It must be noted however, that in my PhD work, conducted outside of the Sintef projects related to Hydro, both the fieldwork, the interpretative- and the writing work have been done, if not heroically, at least alone.

This much said, it is important to have the necessary patience to "crawl around" in the unstructured mountain of empirical material, to flow, to swim in it with all the contradictive and incoherent statements and perspectives you have gathered, to endure for a long time not having clear pictures on what kind of stories the material conveys. Accept that you don't know. Don't jump to conclusions. Many people finish this phase much to early. This is a period where you must search without swallowing "the right interpretation" and the right "solution". That is also one of the reasons it is an advantage to be several involved, to not jump to conclusions too fast, keeping each others "obsession for meaning" within bounds, and to keep each other floating so you don't loose faith and give up because everything is "fragmented" and points in all directions, so that the feeling of drowning do not become overwhelming.

One solution to make the unwieldy material more easy to handle is to let all the voices speak, more or less on the same level of authority. Let "the others" talk directly. Polyphony is, however, not the only treatment, neither is narrative method as an approach. As Nielsen says, "Polyphony is one way of writing – one out of many" (1996: 216). Where authors like James Clifford (1986) means that a polyphonic style is the right thing, among other things because it more easily documents complex social reality, the polyphonic style suffers from many of the same problems as with "translations" between the understanding of social reality in general and the communication of it in sentences with words that follow each other on a line. No matter how much you twist and turn, no matter if you use two columns as we did in the learning histories, written language is and will always be linear. The text has to be

arranged with something before and something after, polyphonic texts can't be compared to polyphonic mobile phone ringing sounds, at least not on the practical level. The simultaneity in the sound for example in a choir disappears in the written representation. For many a polyphonic approach will probably render intensity, authentic feeling and dynamic in the story, but others might find it messy and difficult.

The choice of style does not decide whether what you are saying is reasonable or not. A lot is decided by what use the text is for, which genre that "fits" and the solutions you choose to solve the challenges of the writing style, and not the least the issue about finding your own voice, tone and modality in the writing. And even if the interest for dialogically based polyphonic communication, as it has developed from the "critiques" of the 1980s, grew out of the social scientists distaste of speaking "for" the other, on others behalf, and the wish to avoid that by including other voices directly and weaken the role of the author and his authority, and "spreading authorship around"; it is in a way impossible to write without an authority. An abundance of quotes and accumulation of raw realities is not the only answer to a narrative method, polyphonic or not. Even if it had been an ideal, the idea of removing the "intermediary", the author, is not very realistic. You cannot escape the authority implied in the "curse of composition"; of editing, adjusting, choosing angles, shaping, cutting and pasting, arranging and omitting. As some documentary films that are solely made of direct speech from the interviewees cut together, it would be utterly naïve to think that this in any way has removed the filmmakers authority and "touch" of the final product. Narrative texts of research, as all other texts, polyphonic or not, must and should be composed. We shall have a closer look at this below.

Faction: the value of tropes

As mentioned above, we wanted to communicate the learning histories in an engaging human form, far away from the language of bureaucracy, business or the rather dry language of "traditional science", whatever that is. We used journalistic tools to put

things on the edge, and from the theatre we adopted the conscious representation of partly emotionally loaded themes. We also wanted to use the figurative tools and tropes from literature, film and popular culture. Also, we had ambitions to use the rhetorical power embedded in the forms of pictures, metaphors and other figures in the communication of the learning histories. For example was great care put into the forging of the titles and sub-titles of the stories.

The classical rhetoric builds upon Aristotle, Plato, Quintillion, Cicero and other philosophers. Since Socrates had to empty the cup of poison in his combat for truth against the eloquence of the sophist's rhetoric, as a way to persuade, has lived in shame and in the shadow of history's biggest linguistic martyr. Not until the narrative, or just as well, *rhetorical*, turn in the social sciences in the 80's, has rhetoric been partly renovated and accepted. This "return of rhetoric" has been forged in a new fashion, under the philosophy of language banners like semiotics and semiology, with Saussure and Peirce as the central proponents. Probably the most important contribution from them has been the acknowledgement that most signs are arbitrary,[64] and needs one or several codes to be interpreted. There is no natural bond between the expression (the physical sign) and the mental content of the sign. The animal we call /dog/ can just as well be called /hund/ or /blop/. It is only through convention, what we call the cultural code, that people agree what the sign means, and the expression /dog/ is thus connected with this particular category of animals.

Our use and faith in codes varies between social groups, groups of work, generations, subcultures, etc. An illustrating example can be derived from Lewis Carroll's sequel to "Alice's Adventures in Wonderland" – "Through the Looking-Glass". In the latter the White Knight tells Alice that he has written a song and says: "either it brings the tears into their eyes or else-". "Or else what?" Alice asks. "Or else it doesn't", says the Knight. In a book about logical symbolism they refer to this passage and express the same content of meaning in this manner:

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[64] A sign can be conceptualized as something standing for something else, an idiom standing for a content, a signifier and a signified.

(∃x) (y) (z) (t) ((y is a KS ≡ x is a KS).
(z hears the Knight sing x at a time t ⊃ ((x brings tear into the eyes of z at time t) v ~ (x brings tears to the eyes of z at a time)))

They also add that a "Wilderness of babble can be peeled away by the razorsharp edge of symbolical logic. The logic of symbols have been used with success to find the core of the meaning in vague and complex argumentation often found in law and metaphysics" (Bergemini 1967). For most people probably, the "babbling" between the Knight and Alice would be rather more meaningful than the logic of symbols as presented here.

The significance for our purpose here is that through the narrative turn, other type of codes for knowledge and communication has become more legitimate in the social sciences, for example the use of rhetorical devices from literature and film. We need, however, to remember that science always has used rhetorical devices, so today it is not controversial to claim that for example the distribution and use of metaphors is common also in the natural and engineering sciences. Thus, in contemporary reflections rhetoric can be seen as a neutral notion that can be examined by the way it functions in actual social settings. It signifies communication with the purpose to convince or persuade and produce well formulated (and beautiful) expressions.

The purpose of rhetoric is to make us act, to do something. Rhetoric should thus be a core theme in management studies. Actions can also be a form of rhetoric; they do and say something at the same time. As the case with language, actions too have both expressive and instrumental aspects. And whether labeling it semiotic or rhetoric, both are theories of meaning and knowledge and how these phenomena arise and are maintained. They want to convey the underlying "cultural codes" that decides how we interpret both linguistic and non-linguistic "statements", and are thereby interested in the collective fields of meaning and the way these are instantiated and conveyed in cultural communication.

In the learning histories we wanted to use semiotic knowledge and rhetorical devices to communicate significant dimensions in the material we analyzed. To link the

information about the different professions, the tools and facts intimately with peoples ambitions, visions, emotions and meanings in a tight and engaging web that also was designed to enable and mobilize action. We had to be careful to keep the balance. We strongly wanted to avoid expressions that gave way to associations to the use of rhetoric as "propaganda". The mobilization of action had to emerge as a result of the reader/users reflections and interactions, such as the times we used interactive medias in the construction and communication of the stories, like in the Hydro case, with the narrative material.

We wanted to use metaphors and other images to contribute in indicating some directions, but without determining any conclusions. To use rhetorical means to indicate shapes, but not dictate paths to follow. Briefly we tried to use the potential of rhetorical tropes to ascribe meanings, open new interpretations and possibilities without closing in on unambiguous authoritative clarity or monologues. Therefore, as mentioned earlier, quite some time was spent on finding good headlines and sub headlines, both poetic and metaphorical and based upon popular cultural references, and at the same time deviced to point out relevant and particular aspects of the material and the phenomena thematized. Some examples, which are difficult or impossible to translate from Norwegian: "Pioneers of telecommunication on the cyber-prairie", "To travel up Nedre Singsaker", "Mixed choir on the road", "How the dinosaurs died – and was resurrected: The preliminary and astonishing story about Aetats restructuring from departments to teams", "The internal of EXTERNAL (a EU-research project), and the Hydro learning history: "To plant a remelt plant". The latter story had sub-headers like "Jamón Jamón", "The flight of the Flamingos" and "Sowing the seeds of success", "To smell the coffee", and "An atmosphere of enabling". The opening of the exposition of this learning history, which was made in a hypertext format, with use of text, photographs, models and video, and were the content revolved around the start-up project of the new plant to remelt aluminium in Spain follows:

> "Full attention. Madrid, approaching AAZ. Excitement. Gut tingle. A new remelt plant about to rise from the ground. Totally unique. Never seen before. Very far from manufacturing a car like the one we´re driving. The

> taxi-driver talking, a lot, only in Spanish. Think of jamón Iberico. Pata Negra. Think of Penélope Cruz, in the movie entitled Jamón Jamón. Both edible. What makes up the Spanish ham quality universe? Here's a few of the ingredients: Careful farmer craftmanship, thoughtful and precise nutrition, locally anchored (top notch is jamón Iberico from the town Jabugo: a 300-year-old strain of lean pigs who live in Extramadura) "production methods", learning traditions maintained through generations, lots of embodied and tacit knowledge on behalf of farmers and methods, an explicit and national quality system and classification agreement. In sum, the breeding of quality ham is a skillful combination of craftsmanship, precision in planning and practice, local knowledge, a precise quality system to follow and the luck in nutritious corps to feed the pigs who dine almost exclusively on the acorns of a special cork tree. The result? Well, we all love it! Concerning the movie, it ended when Penélope and the other main characters fought each other to death with the jamón legs. Jamón, don't forget, used incorrectly, could be dangerous. So is liquid metal. Think now of a new HAMP remelt plant in the making. In Azuqueca, Madrid. You see some of the parallels?

A longer excerpt from this learning history is provided as ethnographic material in chapter six.

Finding new truths

Based on the discussion above, where does narrative oriented research lead us? When we have distributed the authorship more evenly "around", but without dismantling all authority; when we have told many stories with many voices and perspectives; when we have communicated rich descriptions, been true to the "raw empirical realities", but at the same time forged "factional" stories with creative use of rhetoric. What then? Many would end here, if not before. But if it supposed to emerge good science out of a narrative approach you have to offer more than "just good stories". Professional storytellers of different kinds already abound. Qualitative science, narrative or not, has to offer something more, like developing a new theory, new models or bringing forward new insights, finding "a new sort of truth" (Bate 1997: 1168).

Bate (ibid.) argues that the research has to communicate a few clear points, a punch line or two. In the language of qualitative literature on method we can say that

the research has to satisfy some demands for abstraction and generalization. New or alternative truths of common interest must be lifted out from the specific empirical exposition you have examined and communicated. The “punch line” gives the work a focal point, it sums up, simplifies and raises the complex story that has been communicated. It represents a closing and a termination of the project, which hopefully leaves the reader satisfied. S/he is given “value for money”, has taken a step further, discovered something new, seen a new perspective, or turned common ideas upside down.

However, there are many different ways to give closure to the research project with points and punch lines. A lot of people feel satisfied with the typical Hollywood-film ending, but others feel that the solutions in the end is totally banalizing and collapsing the most exiting themes of the film. The demand for just *one* solution to complex and contradictive themes in the Hollywood movie lead many to dislike the endings and are characterizing them as simple, superficial and artificial. The same thing can happen to the main points, or findings, in the research project. Because at the same time as the findings need to be exactly ”punchlines”, they have to contribute something, but also they have to avoid to ending up in the obvious and banal. Points like ”on the one hand and on the other hand” is arguably not enough for constituting a punch line, but simple, obvious and self-evident points like ”restructuring processes in organizations can be difficult” seems immature and irritating. The main points are about the keywords the study ideally will be remembered for. For example is Geertz remembered for ”the cockfight as a social structure”, Veblen for his ”conspicuous consumption”, Barth for the importance of boundaries in the production of ethnicity, and Kunda for his research in organizations showing that “burnout” also has its positive sides.

In relation to this aspect of a narrative approach to anthropology and ethnography, the learning histories are far from exemplary. They were not required to develop new theories that were going to be communicated to the research collectives. The narratives were first and foremost going to be communicated to and among the

users. Nonetheless the questions of points and punch lines were important and thoroughly discussed. The ambition from the point of origin was that we wanted next to nothing of summaries, “findings”, conclusions and teachings synthesized and ”translated” and chewed out as ready-made interpretations by the researchers. We believed it would ruin some of the narrative and performative qualities of the stories, the experience of ”living through” the stories, to go treasure hunting, to do interpretations and to pull out the lessons learned for themselves based upon a polyphonic and polysemic story.

The first drafts of the stories came therefore without a summary closing. The ideal was more modernistic film than the Hollywood (classical) movie, where the ending of the former often comes suddenly, as if it was in the middle of the story and with several loose ends and no obvious single ”solution” of the conflicts and tensions developed in the movie. But after several requests from the readers, or users, we realized we had to at least approach the ”Hollywood-closing” to a certain extent. But not without “rhetorical resistance”. The closings of the stories thus emerged as having considerable significance in relation to demarcating some boundaries of the stories and to single out direction(s), but still without determining, essentializing and “freezing” the stories too much. Due to the reaction from the users of the stories that they needed some form of ”summary endings”, we chose to use a lot of rhetorical devices to avoid getting trapped in the banalizing and unsatisafactory Hollywood-closing.

The Hydro web-based multimedia story, ”To plant a remelt plant”, about the start up of the Spanish aluminium remelt plant, got the sub-header ”Birth Pangs!” for the closing, and read the following (notice also the Hollywood narrative trick of reaching back to the themes in the introductory exposition of the story):

> ”Period. Partial stop. The Azuqueca plant is well on the track to maturity. Hopefully you have now been traversing this site devoted to the story of its becoming. Browsing text, videos and pictures. Maybe you re-lived some of the experiences? Maybe some impressions will stick? On interfaces, on training efforts, on the importance of a culture of cooperation. On a foot looking like a piece of meat? Maybe you even think that safety, motivation and hard cash are interdependent, belonging to the same spheres? But what

> happens next? What happened next? Postponement of the planned start-up date. Equipments weren't properly tested in time. Then, on the 18th of December, a Saturday. Madrid cold. The pipes were freezing at the plant at the time. Suffering from being in labor all day, planning to get the first cast done during that particular Saturday. Problems, postponement all day. Then, finally. Night. 2.0 AM. Birth pangs! The first AAZ cast sees the light of the famous Madrid nights. From the 18th of January production is well on the air. Approaching April and the Dream-team is withdrawing. Production figures preceding the plan. Three minor accidents. Only time will tell the rest. So, KISS and while goodbye to the learning historians, leaving Jamón, Penelope, the atmosphere of excitement, the frustrations of IS/IT, the paradoxes and the well-prepared training concepts, the AAZ plant will live on. And just like Jamón, the Plant will hopefully just grow better with age."

Very different from the singular learning histories, the corpus of narrative and other ethnographic material conveyed in the present thesis (the Hydro learning history examples included) has a much stronger mandate to serve as an empirical basis that, along with historical and statistical data and theoretical reflection, should produce new insights in the form of abstractions and generalizations. This result is what I discussed as "anthropology outdoors" in the previous chapter.

Two and three cultures

Social anthropology, as other mainly qualitative sciences, has always struggled with ambivalence on the one hand towards the "real science" (read quantitative methods) and on the other hand towards the arts. The conclusions in the critique of positivism were that actions irreducibly are linked to a dimension of meaning. And that we only find actions, intentions and meanings in a society of humans, and not in nature (Neumann 2001). The difference between the "pleroma" and "creatura" of Gregory Bateson (1979).

In other words, there are different criteria's of validity within the different fields of science. Qualitative science has to be judged by other criteria's and weighed up against other types of standards than a science of physical realities based on quantitative methods. While the sciences of interpretation and meanings has to be judged by conceptions such as truthfulness, sincerity, perspicacity, integrity, authenticity,

credibility, criticality, reliability and mutual agreement, the natural sciences is judged by the power of predicament, truth based on correspondence and the possibility of falsification (cf. Stewart 1998: 12). As indicated earlier with the present work's wholisitc ambitions in the direction of seeing anthropology as an arena for a new unity of science, in chapters six and eleven, it will be argued for a new twist and reemergence of a new unity of the sciences, for a "radical naturalism" linking man, mind and nature at fundamental levels of "entangled reality".

To be established as legitimate science a major strategy of the "soft sciences" has been to dress up in quantitative clothing. Psychology is a good example, where quantifying the soul has been a central issue. The same also goes for anthropology, as noted by Levi-Strauss when contemplating that certain circumstances:

> "… leads anthropology to nourish a secret dream: it belongs to the human sciences… but while it resigns itself to making its purgatory beside the social sciences, it surely does not despair of awakening among the natural sciences at the hour of the last judgement" (1966: 118).

A quick look at the history of science shows a continuous struggle between that which C. P. Snow (1959) has called "the two cultures", where the two sides have alternated in having the upper hand in the different disciplines, but always with subversive and alternative tendencies emerging from the other sides.

One of the post-modernist slogans has been that the sciences are developing in a more and more fragmented direction and are increasingly not talking the same language (Lyotard 1986). In the contemporary, other voices claim that we are in a time of crosspollination or trans-science, and are joining together and harmonizing "the two cultures", if not on a superficial level, but on the deeper epistemological and ontological levels. In this respect at least some parts of the sciences has been labeled a "third culture" (Brockman 1996). More about this possibility and potentiality in chapter six, were an ontology is carved out were post-modern insights about the subjective basis of knowledge is merged with a radical non-dual objective realism.

The historical efforts to reconcile scientific and "commonsensical" knowledge, and thereby redefine both, has been tried from time to time, from among other

Giambattista Vico in the seventeenth century, to the realistic novel of the Chicago-school in sociology, to "organizational storytelling" and different post-modern projects. In her brief historical examination of the history of this harmonization Czarniawskas' (1998) temporary conclusion is that even if it is clear that the narrative offers alternative modes of knowledge, the relative advantage of using them in scientific settings are still unclear. As we have tried to show in this chapter both the general narrative turn in the social sciences and a narrative para-ethnography is more a question of modality, emphasis and accentuation than a revolution. In this way we can say that the narrative entrance to qualitative science and an engaging anthropology-in-action offers enchanting possibilities and mesmerizing methodologies, but as with all choices of discovering procedure it also present ample options of getting lost in translation and narrowness.

In Part II of the thesis further investigation into several of these epistemological and ontological issues is given. The focal point of departure are questions revolving from empirical notions of "technology", analytically considered as a broad and polysemic term, as related to project and corporate work in Hydro. It evolves into analysis and philosophical discussions of instrumental rationality, complex causation, and the ontological underpinnings in constructs and unfoldments of nature and culture.

PART II

TECHNOLOGY, ONTOLOGY AND CULTURE/NATURE

Chapter Five

5. Managing in the Middle Kingdom

[Engineers]… those great despised figures of culture and history... they're novelists.
(Bruno Latour 1996: 24)

Logic is a poor model of cause and effect.
(Gregory Bateson 1979: 54)

It was a cold day in February 2001, in the ancient city of Xi'an, Shaanxi province in the People's Republic of China. Local farmers with shovels, crowbars, levers and small machines worked side by side with big bulldozers from a subcontractor to prepare the site for a new Hydro Aluminium magnesium alloy plant.[65] The farmers' work consisted mostly of back filling land and blending of soil and lime. A collaboration the farmers themselves had coerced upon the subcontractor, and thus upon Hydro Aluminium by means of physically shutting off the site for any work, until they could partake in paid work in the preparation of the site themselves.

The venture had a bit earlier hit upon challenges of a more historical character. In December year 2000, the site had turned into an archeological excavation that, from the project scheduling point of view, delayed the planned progress of the project.[66] From a cultural historical point of view, the discovery was both astonishing and somewhat anticipated. Cultural relics from the Early Western Han Dynasty (206 B.C. – 24 A.D.) was unearthed with the aid of local archeologists. Among other things discovered and brought to a museum was a special bronze "Fang", believed to be a ritual object to be used to offer sacrifices to Gods or to the ancestors. As one of the Hydro project members dryly noted: "You cannot dig a small hole in the ground in this area without stumbling upon cultural treasures of inconceivable dimensions".

Today the large majority of people in China call themselves "Han Chinese", named after this dynasty, the dynasty that succeeded the short-lived but highly significant Qin-dynasty (221 B.C. – 206 B.C.) which under the ruthless rule of Qin Shi Huang Di, literally meaning "the first emperor", is recognized to have united China under one dynastic rule and which gave us the present name "China". The Qin dynasty thus historically marks the transition from Ancient China to Imperial China, with the capitol located in Xianyang (a few km northwest of present day Xi'an). Nearby, in the

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[65] The magnesium business area was a part of Hydro Aluminium. It was recognised as the leading producer of pure and alloyed magnesium in the world before Hydro exited the business completely in 2007.

[66] Many other factors also contributed to delaying the progress, in addition to the farmers intervention among other things, the late capital expenditure approval, longer commisioning period, delays in every contract and insufficient management capabilities.

Lintong county, a group of peasants stumbled upon some pottery in 1974, a site to become the possibly most significant archeological excavations of the 20th century, listed on UNESCO's world cultural heritages list in 1987 – the uncovering of the Terracotta Warriors and Horses, near the Mausoleum of emperor Qin.

A one-third seized replica of the "Fang"-relic excavated from the magnesium plant site in contemporary Republican China is today used by Hydro as a beautiful company gift with historical significance. For Hydro, the localization in Xi'an of their first wholly-owned light-metal plant in the People's Republic of China, had a radically more contemporary justification. In the last decade or so the metal industry has been facing an emerging revolution due to China entering the market at high speed. In 1990 China produced 5000 tons of raw magnesium (of a world total of 260 000 tons). In 2006 China produced 526 000 tons alone (of a world total now of 726 000 tons).[67] About one third of western raw magnesium producers have been shut down as a result. The Chinese formula for outcompeting advanced western producers has been a low-tech, labor-intensive and heavily polluting production process called the "Pidgeon process", developed by the Canadian researcher Lloyd Montgomery Pidgeon in the 1940s. As the Hydro executive responsible for Asia stated concerning the Xi'an investment: "we had to enter China or exit the business". As it turned out, they did both. First they entered China, and in a few years they exited the business.

However, has emperor Qin and these millennial sweeps anything to do with the establishment of a contemporary magnesium alloy factory in China, except the somewhat spurious link that the plant was located firmly on historical grounds of considerable depth? Arguably, the success of the whole unification of China was due to the most extensive, radical, effective, consequential and ruthless acts of standardization known to mankind. Then we might appreciate that the abstraction and standardization processes of modernization, including indeed managing, have had an ancient precursor in the practices of emperor Qin.

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[67] See the "International Magnesium Association" (http://www.intlmag.org/statistics.aspx) and Chen et al. (2001).

When Qin ascended the local throne in the state of Qin in 246 B.C., the state already had two significant advantages, in practice an efficient military machine with new weapons and, in the ideological realm, the pragmatic and cynical Legalist philosophy (the Fa-chia) of great masters such as Prince Hanfeizi (280 – 233 B.C.), known also for the "art of persuasion" (Han Fei Tzu 2003).

The Legalists perceived human nature to be evil and stressed the combination of rule, skill and dominance to secure the centralization of state power and ensure the performance of the edict (Scott 2004). In the unification of China, emperor Qin let the legalist theories into full play, and built some of the major foundations of the future Chinese society on legalist principles of rule. When the victory over the other states was complete in 221 B.C., he set to work with "demonic energy and [was] phenomenally successful" (ibid.: 47). He reorganized society completely,[68] all people were brought under direct control of a centralized government (their former allegiance to individual landowning lords was discontinued), and uniform laws and taxation were enforced regardless of former state boundaries throughout China. It far from ended here.

Unconcerned with earlier traditions the emperor proceeded to standardize weights and measures and to adopt a unitary system of money (a single coinage). The written script was also standardized in form, and to further enable trading and transport throughout the vast empire the track width between the wheels of carts was standardized. As Scott (ibid.) explains, this was not a minor matter as the friable loess soil of northern China produced worn down cart ruts to an extent that it enforced the transfer of goods between vehicles at the borders of the former states. Another of emperor Qin's major feats was the redefinition of pitch standards for music instruments. Although being practically inclined, he somewhat ironically died quite young due to overexertion trying to secure an elixir of immortality.

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[68] The country was now divided in 48 military districts, each with three officials controlling each other (a civil governor, a military governor and a direct representative of the central government, a system we recognise also today), and all officials were divided into eighteen orders of rank.

Most of these standardizations were embarked upon the same year and were all decisive means for securing economic, political and social integration in the unified empire, a unification that has continued for more than 2000 years after his death in 210 B.C. The continuation can be seen for example in the bureaucracy and in the whole future Chinese conception of law. The tasks of the latter have according to Scott in short been dividing citizens into the good and the bad, keeping the peace and to strengthen the power of the state. Authority was built upon systems of punishment and reward. It was, however ironically, the unpopularity gained through his excessive policies of standardization that effectively brought an end to the Qin dynasty, and which has marked emperor Qin as a ruthless tyrant in Chinese history. One "achievement" not easily forgotten in China was when he in 213 B.C. ordered all books (except those of the practical subjects agriculture, divination and medicine) to be burned and all scholars who disobeyed to be executed. On Mount Langye, near the east cost of Shandong, one of the many stone stelea he erected on sacred mountain peaks reads:

> "Everywhere under vast heaven He [Qin Shihuang] unifies the minds and integrates the wills. Vessels and implements have their identical measures, One uniformly writes the refined characters" (Kern 2000: 27).[69]

As will be sought illustrated throughout the following descriptive analysis, the start-up of a new magnesium alloy plant far away "from home" within a self-designated "global company", employs an impressive apparatus of standardization and formalization devices, or techniques and technologies, not completely dissimilar in their fundamentals, but in terms of brute force far less ruthless, from the approach emperor Qin pursued. The standardization and classification apparatus in the case of investment projects for establishing a new corporate venture seeks to produce particular but differential forms of both objectivity and subjectivity: ingenious and precise tools and technologies, high quality and globally consistent products, uniform ways of working, coherence of values, predictability of operations, stability of organization, safety in all practices, universal respect for life, responsible individuals and motivated employees

[69] Referred in http://www.asianart.com/exhibitions/shandong/9.html

(list not meant to be exhaustive). Through the social interaction and circumstances the actors at the plant and in the global Hydro Aluminium network enacts.

These are both instrumental and expressive efforts of commensurating cultural forms in the company, concurrently with its ever-increasing globalization process. But as we shall convey, they are in effect not only standards for homogenizing processes of correspondence and unification, but likewise means for diversification and transformation in a global context. Similarly, in the perspective of Latour (2005) and the actor-network approach, what makes the "global" assemblages of connections *stable*, what holds it together, is the obvious role of standardization, formalization and classification of various kinds.

Technology, art and truth

The immediate theoretical context of the following exposition is the acknowledgement of various insights with historical roots from the Hawthorne project and the socio-technical tradition (Trist 1981) that together formed the human relations school of organizational thought, and has inspired several strands of contemporary social research in industrial, organizational, science and technology studies (discussed in chapter one and two). For the present chapter the most relevant perspectives relates to the weaving together of social and technological issues in calibrations that are focusing more on a) the social mechanisms that pertain to several dimensions of the construction of technology (e.g. Bijker, Hughes, and Pinch 1987; MacKenzie and Wajcman 1985), b) the status of knowledge development processes in organizational contexts characterized by work life democratization (Greenwood and Levin 1998; Gibbons et al. 1994), and c) especially perspectives targeting the interrelationship between the "transfer" or "travelling" of technology and the social dynamics of idea exchange, organizational development, learning and action (Czarniawska and Joerges 1998).

The influence of actor-network approaches and especially "technological translation" theory is best summarized by Latour's point that: "There has never been

such a thing as a pure 'thing' or a pure 'human'" (1993: 138). That is, technical and social systems are seen as constituted in processes of co-evolution (Kelly 1994; Varela et al. 1991). The use of the concept of co-evolution, however, also signifies a movement away from an undue language focus implied in the "translation" metaphor, similarly as noted by the "transfiguration" perspective of Gaonkar and Povinelli (2003). The latter emphasises the mapping functions or conditions for a material thing (rather than meaning) to move across space. Here I propose the metaphor of "transductions" to signify the conversions and mutual constitution of "materialities and meanings" moving across boundaries in a global setting.

Of particular relevance for Hydro project work, as based in a Norwegian work life tradition, is a differentiation made by Sørhaug (2004: 112), between the Norwegian tradition of socio-technical perspectives (cf. Herbst 1976; Emery og Thorsrud 1976) and the actor-network perspectives (the french-anglo-saxon tradition exemplified by Latour, Callon and Law). In the former, technology and organizing merges in conceptualizations of tasks; while in latter persons and things merge on a more ontological level. While Herbst says that "the product of work is people", Latour's proposition is that "technology is society made durable" (Sørhaug op. cit.).

However, because of some of the shortcomings in these perspectives, which will be elaborated upon further below in the present chapter, the presentation here is particularly inspired by the work on complex or hyperdimensional causality by Stein E. Johansen (1990, 2008), and the profound questioning of technology provided by Heidegger (1977); the latter who raises a number of epistemological and ontological issues through reflections on thse nature or essence of technology. Heidegger argues that definitions of technology, commonly perceived as a human activity (the anthropological definition) and as a means to an end (the instrumental definition), belong together. The whole complex of human activities involved in positing ends and procuring and utilizing the means to them "… belong to what technology is" (ibid.: 4). Thus, technology itself he considers a contrivance, in Latin an *instrumentum*.

A similar definition of technology is reached by Gell (1988), who see technology as: "… those forms of social relationships which make it socially necessary to produce, distribute and consume goods and services using 'technical' processes" (p. 6), and; "… the ingenious pursuit of difficult-to-obtain objectives by roundabout means" (p. 7). In a similar outlook as many of the socio-technical perspective, Gell provides a classificatory scheme of human technological abilities in which he differentiates between three main forms. First is the "*Technology of Production*", defined as "… comprising technology as it has been conventionally understood, i.e. roundabout ways of securing the "stuff" we think we need; food, shelter, clothing, manufactures of all kind" (ibid.). In this form of technology he also includes the production of signs, that is, communication. The second type is the *"Technology of Reproduction"*, and includes under this heading most of what is understood in anthropology as "kinship". The third form of technology he calls the "*Technology of Enchantment*", and it is seen as the "… psychological weapons which human beings use to exert control over the thoughts and actions of other human beings" (ibid.). This form of technology Gell considers to be the most sophisticated that we possess, and includes "… all those technical strategies, especially art, music, dances, rhetoric, gifts, etc., which human beings employ in order to secure the acquiescence of other people in their intentions and projects" (ibid.).[70]

In my own investigation here I consider "technology" in these wide and inclusive meanings of the term, and include both the first and the third forms of technology as defined by Gell, while leaving out the second because issues of kinship is arguably of marginal relevance to our case. Throughout the chapter and also the rest of the thesis I investigate how both the technology of production and the technology of enchantment is enacted in managing actions for intperpreting and mastering both nature and not the least *culture* for the purposeful goal of creating and realizing projects for industrial production. Thus, extensive descriptions are devoted to cultural descriptions.

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[70] See also Gell (1992, 1998).

Chapter nine is particularly devoted to conveying the technology of production and enchantment in the production of *signs* and *rhetoric* of corporate communication.

Contemplating these broader meanings of technology they are all linked to aspects of "bringing about" something; of issues like creating, controlling, enrolling and strategizing. It is thus intimately linked as indicated above to the domain of instrumental rationality. For Heidegger, the instrumental definition of technology does not tell us what technology *is*, and consequently technology cannot be understood without understanding instrumentality itself. He argues that the realm where means and ends belongs, wherever instrumentality reigns, there reigns causes and effects, that is, causality. To understand instrumentality requires thus a more in-debt scrutiny of causality, and Heidegger states that: "What technology is, when represented as a means, discloses itself when we trace instrumentality back to fourfold causality" (ibid.: 6). The four causes he reckons with are 1) the *causa materialis*, the particular material or matter involved (in our case ICT tools, drawings, construction tools and materials, etc.); 2) the *causa formalis*, the form or the shape the material attains (in our case design basis and templates, "uniform" sites and plants, etc.); 3) the *causa finalis*, the end context of use (in our case a plant in full production with the right qualities and standards and a compentent organization); and finally 4) the *causa efficiens*, which brings about the effect that is the finished material with its form in relation to some context (in our case the managers, experts and other participants' actions in project work). Discussing what causes are, and their relationships, Heidegger sees the causes as being *co-responsible* for the outcome.

They are four ways, according to Heidegger, which are interlinked in being responsible, not in either the moralistic or the purely effectual way, but responsible, for bringing something forth into appearance, in *presencing* [An-wesen]. These are four ways of unison "*occasioning*" that brings forth that which is not yet present into presencing and appearance. The bringing-forth is designated by Heidegger with the Greek concept of 'poiesis' from antiquity; and poiesis "… comes to pass only insofar as something concealed comes into unconcealment" (ibid.: 11). Heidegger hinges upon the

antique Greek trilateral differentiation between Praxis, Theoria, and Poiesis. As the lowest, most profane, level in a moral hierarchy of activities Poiesis, or "Tekhne", comprised the whole realm of "artificial creation"; of both what in the modern meanings are separated as "fine arts" on the one hand, and (industrial) production on the other (cf. Øfsti 1999). This "poietic" bringing forth Heidegger understands as a form of revealing, i.e. of truth (the Greek word 'alethia' which the Romans translated into 'veritas', truth'). In poiesis technology, art and truth come together. Heidegger summarized his questioning of technology at one juncture in the following way:

> "What has the essence of technology to do with revealing? The answer: everything. For every bringing-forth is grounded in revealing. Bringing-forth, indeed, gathers within itself the four modes of occasioning – causality – and rules them throughout. Within its domain belongs ends and means, belongs instrumentality. Instrumentality is considered to be the fundamental characteristic of technology. If we inquire, step by step, into what technology, represented as means, actually is, then we shall arrive at revealing. The possibility of all productive manufacturing lies in revealing. Technology is therefore no mere means. Technology is a way of revealing… It is the realm of revealing, i.e., of truth" (ibid.: 12).

It is as revealing, not as manufacturing, argues Heidegger, that poiesis or "tekhne" is a bringing-forth. While Heidegger from an investigation of technology comes to see technology and art as intimately related and the same, Gell comes to the same conclusion also from investigating art (1998).

Anticipating some of Heideggers further reflections about the particular nature of *modern* technology, which he label "Enframing"; he sees the essence of modern technology as distinct; as "the way in which the real reveals itself as standing-reserve" (op. cit.: 23). The bringing forth, the revealing of truth in modern technology is a challenging-forth, a "setting-upon" and "setting-in-place", an ordering of the real as "standing-reserve". Modern technology is intimately linked to the rise of modern "exact science", especially physics. This because the revealing in modern technology concerns above all nature as the chief storehouse of the standing energy reserve.

Such considerations are strongly present in the Hydro sphere of project and corporate activities. Hydro was founded on the taming of waterfalls energy powers, to apply them as wanted from their "storehouse" in nature as a standing reserve. Aluminium activities are also heavily based upon the extraction and managing of nature's "energy reserves". Furthermore, aluminium products are "branded" by Hydro as "energy banks". A metaphor vividly illustrating Heidegger's point. "Enframing means the gathering together of that setting-upon which sets upon man, i.e., challenges him forth, to reveal the real, in the mode of ordering, as standing-reserve" (ibid.: 20). Modern sciences are a prerequisite for modern technology, as pursuing and "entrapping" nature as a "… calculable coherence of forces" (ibid.).

Little capture the image of entrapping the energy's of nature better than Kristian Birkeland's, arguably the most gifted scientist in Norwegian history, technologies that produced food (fertilizers) out of "thin air" and provided the basis of Hydro in 1905. As we shall see, it is not only "nature", seen as some "outer physical category", that is in the contemporary Hydro work interpreted and mastered, culture is likewise turned into an object of mastery and management.

In light of this theoretical and philosophical outline the questions that linger have to deal with what kinds of technologies of production and enchantment are utilized; and what modes and kinds of revealing is at play in our empirical context in the project work of the industrially based technology company Hydro. Subsequently, what kind of truths might happen here? To be able to start answering these questions, we have to look more in detail at the ethnographic material at hand. The material will seek to display some of the immediate aspects related to the anthropological definition of technology in the present context, that is technology as human activity. At the further remove, unfolding the consequences of the anthropological definition of technology as human activity provides us with a rich basis upon which to further investigate the instrumental definition of technology, and arguably also a more "transcendental" definition; and thus to explore truths related to technology both in particular and in general.

In the words of Heidegger, we cannot directly observe the "essence" of technology, of Enframing, thus we discloses some of the standardizing and categorizing assemblages and the strategies of enchantment performed in the technological activities of social actors. These are activities that, according to Heidegger, "… merely responds to the challenge of Enframing, but never comprises Enframing itself or brings it about." (1977: 21). As outlined in chapter three, here the approach to the particular "nature of technology" in the Hydro context is the combination of both empirical description and analysis, and philosophical investigation and reflection. An example of what was advocated as anthropology seen as "philosophy outdoors", of reflections in the real world.

Counterfeiting, strategic secrecy and emergent learning

The Hydro magnesium start-up project, for the establishment of the plant, chose not to implement cutting edge technology in their new venture. Although Hydro deploys possibly the most advanced technology in the magnesium industry they chose for the Xi'an plant a "medium tech" standard that was operative at the Herøya plant in Norway in the 1980's. One of the main reasons for this was the fear of being imitated by competitors. As one technical supervisor on the project noted:

> "Of course there was a fear that our technology would be imitated when entering China. You have to expect that in a couple of years your neighbors have the same equipment. That was the reason we refrained from bringing our [cutting edge] black boxes in – they would disappear".

Indeed, the fear proved to be well founded. Due to lower production cost and proximity to the Hydro production plant (located there, amongst other reasons, for ease of maintenance), Hydro chose to source almost all technology from suppliers who were geographically located as close as possible to the new plant. Soon after the Chinese technology supplier had produced the Hydro proprietary casting belt technology for the Xi'an plant, they offered the same technology on the open market – complete with pictures of Hydro staff at work in the plant. Other Hydro plants in China had also major

experiences of counterfeiting, and stories and cases from global companies in China experiencing the same abound, for example in the automotive industry (Li 2004). However, to a major extent most Hydro managers[71] and technical advisors did not express the fears that would emanate from a naïve technology replication and knowledge imitation model. As one of the Presidents of Hydro Aluminum noted: "Our competitive advantage does not lie in technology per se. Everybody, including competitors, is free to buy the same or similar technology, as they may feel like. It is the competencies of our employees and the way they together utilize the possibilities offered by the technology which award us competitive advantage".

The President displays a sophisticated model of the relationships between technology, practice, knowledge and good results. Indeed, the head of the largest division within Hydro Aluminium, the executive that had advocated the Xi'an investment in the first place, also voiced the case for technological transfers as development aid to China, for the principal good in helping develop China into a modern industrialized country.

The apparent tension implied by the two quotes of counterfeiting vs. technological transfer "aid" manifested itself in the views of organizational members, other than the top-level management just noted, as an overall necessity for strategic secrecy. Most executives, major and mid-level managers involved to a larger or lesser extent in the Xi'an start-up voiced the necessity of keeping "competitive knowledge" as secret as possible. Against this position another view was thriving, conceptualized in the local Xi'an start-up organization as critical for a successful start-up. This position stressed local organizational learning (cf. Argyris and Schön 1996) and building of individual and collective competencies. That is, on the one hand, some of the higher level managers were trying to keep as few people as possible informed concerning critical knowledge that affected competitive advantage – as for instance temperatures in

[71] When talking about Hydro managers in the Chinese context they are of three main types: 1) expatriates located in China of which most are of western origin, 2) local management which are mostly of Chinese origin, and 2) corporate management with responsibilites also for the Asian business, located in Europe.

casting procedures. On the other hand, concern for the great difficulties involved in getting the local plant to operate on the necessary levels of quality, Health, Environment and Safety (HES) standards and management practices, was a driving force keeping information flows and knowledge exchanges as open as possible.

The end result in the Xi'an plant was that all relevant information was openly accessible to more or less all employees – including procedure manuals and specifications of "critical knowledge" and research results and reports from the research center in Norway. Thus, the need for local organizational learning and knowledge development were seen from the local operational plant management perspective as more imperative than the perceived strategic management need for knowledge secrecy. As some strands of the knowledge management literature suggests,[72] this victory of the "epistemology of openness" over the "epistemology of secrecy" may not be of an acute "danger" to long-term Hydro operations, because there is, as the President eloquently noted, much more to "knowledge imitation" than duplicating black box technology and the replication of written down "best practices".

The GM relay

The management resources are perceived throughout the company as pivotal for a successful start-up of a new plant. But in what ways are success measured and assessed? On the most simple to comprehend level a successful start-up is achieved if the project is completed according to the planned schedule, within the appointed budget, at the right level of quality and safety and with as few damages to health and environment as possible.

A completed project means a plant that is up and running with a local workforce only, producing high quality metal at uniform Hydro global standards, made with technology, processes and procedures of the same health, safety and environmental

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[72] E.g. Nonaka and Takeuchi (1995); Easterby-Smith and Lyles (eds.) (2003); Carlsen, Klev and von Krogh (eds.) (2004).

level, and based on the same basic values when it comes to respect for life and work ethics. And now, of course, things get a bit trickier. The people responsible for enabling and instilling these standards are the management. On a light-metal plant, especially in a perceived culturally alien context, the general manager, the GM, was seen as the most critical resource securing the long-term success of the new plant.

The notion of staffing a new plant solely with a locally based workforce stands strong within Hydro Aluminium top management, but also arguably throughout the whole organization. Thus, contrary to all advices you would find in any bestselling reading on "how to do business in China", Hydro chose to try to find a Chinese GM to run the plant from "day one". That is, when the start-up project had set up the plant, and withdrawn to some extent, the responsibility of operations was in the hands of the Chinese GM. It was during the project-period he was hired, and it was the Hydro Chief Representative (with international experience and education and of Chinese origin) located in Beijing, and the Hydro expatriate with most experience in China who organized the first major appointments for the new plant. As the Chief Rep. recalls: "We appointed the general manager, but after a few months we felt he was not good enough. Then we thought about what we should do. So I left myself for Xi'an to become the General manager."

But what had happened? They found him through advertisements on websites, and through headhunters. They got quite a few candidates, and as the Chief Rep. continued:

> "… this guy had working experience, with a MNC, and other companies, spoke English, had an MBA from England, and wanted to go to Xi'an, not so many want to do that, so my feeling was that he probably would be OK as a GM. But for the human being you never know. Especially, when he was there, he didn't have enough experience as being GM in China, it is a very tough job, you have to handle so many things at the same time. He did not have the ability to handle the people issue, also he was not so capable to set up all the systems there. After a few months we felt things were messy there."

The expatriate chief technical advisor allocated on the start-up project from the first beginning to the end, and with many years of experience both as a production manager and from the magnesium research centre of Hydro Aluminium, noted:

> "We wanted a Chinese with experience from multinationals, who had lived in the West and who spoke fluently English. We got that. The problem was that he soon started build his own little empire here. You know, this Chinese personal type of management style were you are a high-and-mighty "small emperor" with unquestionable power. So he started to hire a lot of people, many drivers, many secretaries, spending a lot of money on useless things. Of course, we couldn't go on with that in Hydro."

Thus, the Chief Rep. went to Xi'an to become the second GM. She was a senior executive Chinese, with a PhD in organizational behavior from England, and a lot of experience from multinational companies operating in China. It was not easy for her to go to Xi'an, having a sick mother home in Beijing whom was finally convinced to follow along to Xi'an. Also, she noted: "I had never been GM, but I had done much on human resource, also business development, even have a technological background, I have a degree in material, metal science, MBA in Europe on joint ventures in China." She had worked among others with the large chemical company ICI they set up in Shanghai, very successfully, she said, and "ICI have more stronger management focus than do Hydro. So it was a good chance for me to see how we could do it."

When in Xi'an she said to people that she worked with two hands; "I have to sort out all the day-today issues, there so many people coming with so many things, but on the other hand, I wanted to build a strong management system, so in the future all things will not depend on single persons. We can then use the system to achieve good work. China is not used to this, they are people related not system related." She thus set forth to implement safety standards, Hydro Aluminium management principles and rhetoric are fiercely concerned with safety, and to make management systems for all the different departments of the plant, management systems she felt other Hydro managers and technical advisors, indeed the "Hydro culture", did not address seriously enough.

Corroborating this impression several of the Norwegian managers in the project

disliked what they saw as an overemphasis on management "systems" from the Chinese side. To this the Chinese replied that the expat Hydro people had to understand Chinese culture, and realize the need for "systems". She was also responsible for making internal Hydro communications and presentation material, for example stating Hydro's status as a Fortune 500 company, and their leading positions in the different businesses (see chapter nine). This proved important for attracting competent employees and retaining highly valued "resources".

However, soon both the new GM, the project and the plant faced problems. "She did not know how to treat people", one of the project expatriates noted, alluding to the way he felt she ordered people around. Her perceived weakness in delegating, noted humorously also by herself, in addition to her lack of production experience, but also her family issues, played a part in clearing the way for the third GM.

He was picked, according to the executive responsible for hiring him, "because he was *not* a team player". In light of Hydro Aluminium management principles and rhetoric this could be seen as a somewhat audacious remark. In this rhetoric managers are conceptualized, by definition as it were, as team players, so the statement of this as the main principle for hiring the new GM had a deeper meaning. There had to be some exceptional legitimation for this unorthodox approach. And the reason was the need for enforcing by acceptable means Hydro standards at the Xi'an plant. The plant had several problems in these early days, both regarding safety standards of working procedures (use of protective equipment, and following Hydro Aluminium established "best practices" in other areas), and concerning the quality of the metal. From an executive management perspective, the local organization had to reach acceptable levels quickly. If not they would be shut down in the near future. The organization had to be disciplined.

In Hydro the issues of force and explicit means of punishment may be considered as very sensitive. The company "culture" is by members allegedly built upon values of openness, cooperation, respect for people's own judgment and expertise, low hierarchies and close relationships between management and workers, and to a great

extent on self-management. Thus, when hiring a Canadian *non*-team-player with many years of management experience within Hydro to go to China to get the local organization "to level" with all "acceptable" means it was almost a bit obscene. He introduced punishments like one day or one week without pay for employees who repeatedly did not comply with safety rules. He got all safety equipment to comply with Hydro standards. He did not compromise at all on the safety issue. "They have to be told everything", he said concerning his local organization:

> "If there is a broken light bulb in someone's office, they do not change it. If the cleaner's broom is broken, she will not ask for a new one, if the receptionist is freezing like hell because it is winter and no one has told her that she can close the door, she will not close the door, and the same thing in the production. If there is an SO2 leakage, no one takes action. You have to repeat and repeat and repeat."

Discussing these issues, one of the former expat GM's of the Wuxi plant said they had much of the same experiences. Including that the former Chinese GM there was a "Confucian pater familias" of the company. Soon the safety issue was "solved" in Xi'an, meaning it reached an acceptable level in the eyes of the GM and corporate management. Among the Chinese managers he was looked upon as a competent boss, although especially the HES manager thought he should give more time to explain the reasons behind all the strict procedures.

Nevertheless, throughout 2004 the plant still struggled to get the right quality standards of the products to provide to fastidious Asian customers, especially the Japanese. One reason was the relatively little technical experience of the GM, and thus, the plant was on the internal list of Hydro Aluminium non-performing companies when the GM moved to another assignment after his contract ended. The head of the Hydro magnesium business humorously noted that it was a big contrast for the GM to move from Xi'an, which had no proper labor union to a plant in Belgium were "they go to strike if they find no sugar on the table!"

At the Xi'an plant, if things did not improve fast, the plant was to be shut down. Hydro Aluminium could afford that, it was a relatively small investment, and one of the

main reasons for the establishment in the first place was to learn about the Chinese market. It was not intended to be a "cash cow".

In 2004, the expatriate technical advisor, participating in the project from day one, accepted the job as GM. The executives felt that it was still too early to try with a new Chinese GM. The plant had to be a good performer, in the sense of producing high quality metal in safe ways and be making money, before that could happen. His full attention was directed at producing high quality products. He is a production man to his fingertips, not so much interested in either financial issues or management systems. He is a civil engineer of European origin, with a lot of his work experience from the research centre and the community in Hydro with arguably some of the historically most pronounced participative and non-hierarchical work relations within the company. This "tradition" and related practices he continuously tried to enable at the Xi'an plant. With a multitude of other factors also playing a part, the result was nevertheless that by the end of 2005 the Xi'an plant produced the best quality magnesium alloys in the world, better than any of their historically confident sister plants, and better than any of their competitors. They were even doing a highly significant and status-swarmed development project, in collaboration with the research centre, for a major customer in the automotive industry.

The transfers of management practices for handling technology, people, "systems", culture and politics from the home bases of Hydro Aluminium to it's new corporate venture in China, was far from a linear, one-way and straightforward issue. Different knowledge traditions, sources of power, styles of authority and perceptions of good leadership, were instantiated at different junctures and intersections, and in a multitude of contested constellations.

The Mercedes and the carriage

From being a fresh effort in uncharted territories with not to high expectations of success, indeed even considered a calculated loss in the service of gaining learning in a

new market, the new venture in Xi'an emerges like a dark horse in its fourth year. When already halfway depreciated by corporate management, the plant manifests itself at the top of the list of high performing magnesium plants. Other than the succession of GMs, what other factors played a major part of the transformation? The point of departure, after some of the initial lessons in China was learned, as perceived by the management involved, was not too optimistic, the challenges to success in China seemed gargantuan.

As noted above, during the start-up process it soon was conveyed by the project and start-up management team that knowing how to replicate pieces of equipment from western Hydro Aluminium plants is still a long way from replicating the quality of the end product, the process and procedural standards expected of Hydro also in China. It became obvious to the expatriates involved that is not easy to replicate competencies that consist in tacit know-how, knowledge that is situated (context-dependent), and relational. And compared to other light-metals these types of knowing have proved even more significant and critical in magnesium plants, as the last GM stated. Such knowledge issues are closely related to the more elusive concept of culture. Without elaborating superfluously on the subtleties entailed in the concept of culture and its relation to "technology" and knowledge processes (see chapter one and two), we simply recognize that the Hydro informants' perceived the importance of these depths and linkages, and tried to interpret and "master" them. For example one Hydro expatriate manager in China stated:

> "It is quite a complex evolution behind Hydro's development in China, and it says something about learning in Hydro… obviously too few have had anything to do with the wisdom and mystique of the East. That Chinese culture is quite different from European or Norwegian. We often talk about how it is difficult to understand Italians from say Norwegians, but after all we share the same culture. We have that common Christian ethic foundation, but the Chinese don't. They have a culture that is based on the boss deciding and the emperor being right no matter how wrong it might be. The last emperor was Mao, you know. He could just conjure up anything and people just had to bow down to it, and that is really the Confucian tradition playing its part. It influences the common culture pretty strongly. This means that whatever the boss says, it is ok, and even if it is illegal one has to do it. You don't protest against it. That was also true for our well-

> educated leaders – they had worked in other western companies, but they didn't oppose us, Hydro, as the responsible owner, even on illegalities."

This was a type of thinking exemplary to the "China-experienced" managers. Hydro expatriates held similar conceptions concerning Chinese practices related to processes like supply chain management, production planning, preventive maintenance, quality control and spare parts scheduling. A quote from one of the most experienced Hydro managers in China regarding forecasting exemplifies some of these issues:

> "To do quality control you have to have people who are skilled at planning, detailed planning for a streamlined process that can then be verified. But a Chinese doesn't do it that way, a Chinese produces, and then he'll step back to watch what happens. If there is something wrong, he adjusts. After a while he'll somehow get into the right track. The Chinese, they don't know planning at all, totally incapable of thinking 'what if'. That is one of the reasons that stuff goes wrong. They can't abstract, they think concretely and in a short-term perspective, they are opportunists. It is a culturally conditioned weakness that they don't know how to plan. Chinese culture never had a scientific revolution, to think hypothetical-deductive method doesn't exist in the culture, this has come the last 20 years with education. The younger ones get it, but the older ones don't. The sales manager that we had and generally a smart guy – it was impossible to get him to make a budget. 'I don't know anything about next year,' he said. 'Can't you guess?' I asked; 'you know these customers.' 'No, they haven't told me what they are going to buy next year. All our contracts are for two months.' So I had to make the budget assumption. He wasn't able to or didn't want to – it was against his mode of thinking – which goes 'what I don't know anything about, I don't want to know anything about'. Full stop. These are some of the cultural challenges you have to relate to, and then you have to adjust your practical management and your practices according to the landscape. Don't think anything about the Chinese that they cannot fulfill. If you are in negotiations and discussions with a Chinese and propose something about the future, then it's always fine. They don't have any conceptions, critical ability to evaluate whether it is a sensible plan or not. If you ask them about something – the implied response was 'yes, what do you want to hear?' This is a cultural thing, it has nothing to do with intentions of lying or trying to trick you."

Much of the locally Chinese produced technology made for the Xi'an plant was of poor quality in the eyes of the Hydro technical advisors and managers. For example several

of the machines had old and worn out parts, such as the straps and the valves. The feedback communication loops required to sort out all such quality issues and bring them to a perceived ”Hydro standard” was complex, involving fundamentally conflicting expectations. As one Hydro expatriate jokingly announced: “Chinese don't understand why they should make a Mercedes when they can build horse carriages that function almost as well.” In these feedback and negotiation processes, the importance of cultural ”brokerage” was heavily stressed. The start-up project team included three Chinese members with first hand knowledge of Hydro “standards” and ”ways of working”. These “middlemen” seem to have been acutely critical to the accomplishment of the start-up. Regarding two of them, the project manager stated: “They are very competent, very smart and have an extraordinary ability to communicate with people. They are completely honest – maybe sometimes even too honest. One of them participated in an oil-project earlier in Norway. It is very important when we cooperate with foreigners that they understand our project methodology and ways of organizing. Both of them are just great. I have never earlier conducted a two year project were there have been no problems with the relationships”.

Another expatriate member of the project team stressed the “cultural brokers” negotiating skills: “He is the friendliest man on earth, but watch him in negotiations with Chinese partners! We could never have done that by ourselves.”

Another technological juncture emerged due to customer demands forcing the Xi’an plant to introduce a cutting edge casting pump, never before used in any Hydro magnesium plant. As mentioned above, at the plant they were also doing research and development by casting a completely new magnesium alloy to be used for casting automobile gear-boxes. Thus, the ”original” medium tech standard which had been implemented in Xi’an in the first place was one that now became ”bastardised” by use of both locally produced ”low tech elements” as well as through ”imported” high tech inputs.

An additional churning factor was the technological interface between Chinese raw magnesium production technology (about 60 percent of the global production), also

used as input in Hydro magnesium and aluminum alloy production, and Hydro production technology. The Chinese technology, the Pidgeon process, represented a completely different technological regime, unfamiliar to Hydro engineers, and operating at such a low (in the eyes of Hydro managers) standard of HES, that it was impossible for Hydro to acquire some Chinese suppliers to secure stable and high quality raw magnesium supplies.

Circulating safety – dodging danger

In spring 2005 a sub-contractor falls down from a ladder, from about two meters above ground and was close to breaking his foot. He needed medical treatment and stayed home from work a couple of weeks. The incident caused major havoc in the Hydro magnesium organization. One of the vice-presidents, the head of the Asian operations, immediately flew in launching the full arsenal of managerial investigations, requiring all the reasons behind the incident, demanding an inside-out examination of all aspects of the accident and exhaustive suggestions of actions to be taken, procedures to be changed, and people to be responsible to ensure such incidents never would happen again. Although the vice-president was being perceived as highly competent, experienced in working in China, and generally put in high regard by the local managers, to many of them the seriousness of the demonstration was somewhat surprising, related to the seemingly relatively trivial incident. One explanatory factor for his energetic commitment to the situation, outside the extreme focus on safety in general among Hydro managers, could be attributed to the fact that early in his career in the magnesium business he had been the GM of a plant, not owned by Hydro, that experienced a major explosion with two persons who lost their lives.

The safety standards seems to be something of an obsession throughout the whole Hydro Aluminium organization. In both official and more informal presentations and conversations safety is especially strongly emphasized. The story repeatedly goes like this, instantiated by one start-up advisor:

> "Before we start talking about quality of the products or economic results, safety should be properly taken care of. That is first priority, first base. Without that in place, nothing else proceeds. With a not satisfactory safety culture we rather shut down the whole business".

And lumped together in the conception of safety are also issues like good housekeeping and good environmental and health related working conditions, were the latter refers to not exposing the employees to for example toxic gases (Hydro is arguably known for stressing the S in HES, more than the H and E).

Safety is particularly linked to the use of the technological equipment and the handling of hot metal at the shop floor. The everyday use of the hybrid medium-low-high technology at the shopfloor can be illustrated by an episode related to procedural and HES issues. At the Xi'an plant, some staff has excellent education, some from the top ranked universities in the whole of China, like Tsinghua, but who, nonetheless, did not meet the expectations of some of the expatriate managers. For example, during a quite serious SO2 leakage, none of the staff or supervisors reacted. It was not until someone from the international support team came in, smelled it and reacted immediately that it was discovered – and found to have a maximum level measurement on the SO2 meter.

Myself, without too much experience at a magnesium plant shopfloor, smelled a strange "deviation" at once when entering the production hall. Level two is the maximum accepted level, and now it was at ten, but the actual leakage could have been higher since the meter stopped at ten. The workers, foremen, supervisors and the production manager continued as if nothing was wrong. Afterwards the GM informally tried, but it was obviously difficult, to get the supervisors, the maintenance manager and the production manager to engage in a reflexive and learning type of dialogue. Such dialogue was the intention from the expatriate GM's side, who wanted to use the incident as an opportunity for learning rather than retribution. Most of the responses from the local staff and managers, however, were of the "yes, yes", or "yes, we will fix it now" type of reply. Some of these behaviors were interpreted by the expat as a lack of interest or ability in taking responsibilities for their own safety and work environment.

The standards of safety and a healthy work environment, with the TRI (total recorded incidents) as the measure making diverse safety situations commensurable, is one of the issues that global managers, advisors and resources in Hydro Aluminium tries the hardest to circulate in a most uniform way throughout their plants worldwide. A fatal accident in the early phases of the Xi'an start-up would most probably have jeopardized the whole project.

The Xi'an experiences related to safety were later reinforced in Suzhou. On April 8, 2005, the entry in the diary of the new GM at the start-up plant in Suzhou comprised the following:

> "…and the economic value of the life…
>
> The life and its cost is any easy understandable relation. One living in China feels that life seems not be too important. Accidents with a high death toll have a much lower importance in the media than we are used in the western world. The continuous fatalities in the coal mining industry are in the news, but the attention given is rather low. It seems to be the destiny of coal mining workers. On the other hand people do not really care about their life. Otherwise it is unexplainable how people can risk their life driving like hell without respecting any rule, working in risky environments rejecting protection or breaching rules as they would not exist. For us it is easy to foresee that that will lead to short life. But the Chinese are in general not scared about that. I am not sure if this has to do with a stronger collective feeling, giving less weight to the single person. In an interview about life or death of the American girl Terri Schiavo the people [here] expressed that if the cost are to high the best solution is to "disconnect the feeding tubes", no value, no life. It is not a question about ethics or moral, it's a simply relation of cost and benefit. Strange to live in a society with that high potential of 'suicide'."

On his entry for May 22, he picks up on the issue of risk and safety, a practice by the Chinese he labels the "lifelong and consequent practice of inattention":

> "It is really remarkable to see how little attention the people pay to things they are exposed to, or even could bring them in dangerous situations. You have the feeling that people if they are driving never look behind to see what's going on, they just see in front of them and act, as they would be alone. As a westerner you should never suppose that the bicycle rider in front of you will not change his direction without giving any sign, or that the

> truck coming from left having red light will stop at the junction. The same attention people pay at their daily work. If in my factory people are producing customer goods, and if they see that there are only scrap pieces coming from the machine, they would not think that there must be something wrong or they have done something wrong. A friend told me that recently that he heard a loud and frequent banging from his workshop; he went there to have a look to see what happens. He saw an operator trying to hit a bolt into a hole, which he could not achieve. The bolt was already bended, but the worker still banged onto the bolt to get it into his hole. The diameter of the hole was to small or the bolt was to thick and instead of finding out what was wrong, the worker did as always…. he banged onto the bolt. Especially in our task to work with Chinese people this fact is exhausting for the managers (western), because it requires more and thorough thinking even for simple tasks. The cleaning workers on the street are a very brave species. They face all cars with no fear by paying no attention to any of them. I have asked myself several times the motivation of that consequently practiced way of paying no attention, but could not find the reason. Maybe I will find out one day."

Related to the diary entries is the issue concerning the training challenges perceived by the start-up management in the Xi'an team as critical for success. The challenges were perceived as most severe related to how to get employees to follow procedures and routines. On the one hand the Hydro experts want the new staff to learn to follow the routines flawlessly, but, on the other hand, they also want them to be what Schön (1983) calls "reflexive practitioners" who understand fully what they are doing and can improvise in situations of crisis and breakdowns. As one of the technical expatriate advisors said about the local staff: "they can be very creative in seeking innovative solutions to problems, and you want them to think independently and critically, but you don't want them to be running around doing everything in novel ways!"

Indeed, inventive they were, as for instance exemplified by the maintenance manager, who got the new casting pump to work smoothly in the production. He had to make serious modifications. Another plant in Hydro, with a strong magnesium history, was not able to, even when presented with the maintenance manager's drawings, to get the pump to work smoothly in their production. Nevertheless, some expatriates expressed frustration that, in balancing this double-edged sword, sometimes you ended

up with people not following routines for which they don't understand the rationale, while simultaneously doing things in ad hoc and improvised ways.

The continuous stream of suggestions pouring into the "suggestion box" for improvement on HES, coming from the operators, further illustrate the inventiveness of all when put in enabling situations. Fifty suggestions for improvements came in during a period of three months. A Phillips plant in China had a similar box, but did not receive any suggestions, until they realized they had put the sign for "ideas" on the box. "Ideas", the Phillips management realized after a while, is perceived coming only from the top in China. When changing the word to "suggestions", ideas started to appear. When talking about her work and asked about the Phillips case, the HES manager in Xi'an noted with a somewhat different interpretation, that putting "good ideas" on the box would raise the expectation bar too high to get any ideas from the operators, they would think that "my idea is not good enough", so she had already put "suggestions" on the box in the first place.

The carriage cum *Mercedes*

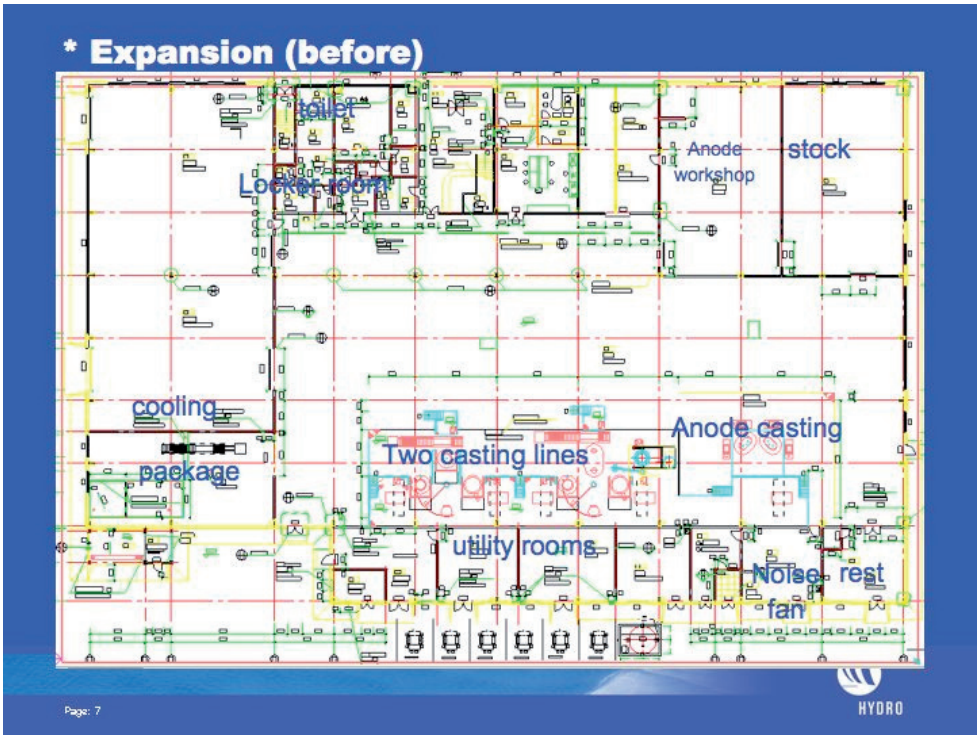
The final sign of the unexpected turnaround at the Xi'an plant, that is, in the eyes of corporate and start-up management; from being a "Chinese carriage" with few if any conceptions about "being a Mercedes" to becoming the number one, top of the line, highest quality and high safety magnesium producer in the world, came when the plant during the summer of 2005 was given the opportunity to expand its production with a fifty percent increase. The request came to the GM from the head of magnesium Asia. The customers wanted more products from the plant in Xi'an. Since its inception the plant had fought to get the demanding Asian, especially Japanese, customers to accept metal products from their Chinese plant. They had strong suspicions against the "Chinese quality". Now they preferred "Chinese quality".

In addition to the two production lines already in operation a third one had to be installed and ramped-up. In conjunction with the production stop during this upgrade,

they chose also to venture upon a project to replace the whole roof of the production building. Because of the gaseous outlets from production the roof showed severe signs of corrosion damages. Normally, for a project of such dimensions the Hydro Technology and Projects partner (which changed its name simply to “Projects”) would have been involved and running the project. The GM felt, however, that his own organization by this point had acquired the competence to do the whole upgrade project by themselves. He assigned the maintenance manager to lead the entire project, including the replacement of the roof. It was a daring choice. A person inexperienced with such projects. In China. And with dozens of unskilled subcontractors with little or no experience with safety equipment crawling in summer temperatures of 50 degrees Celsius up and down the factory walls, balancing high above ground during the tearing down of the old roof and the erecting of the new. If they failed, if serious accidents occurred, if someone died, severe criticism from all over Hydro would abound about breaches in standards and procedures. Heads would probably roll. If they succeeded the project would prove inexpensive and efficient, it would be a showcase.

The maintenance manager was, however, not only in charge of overseeing the replacement of the roof. No, he also designed it, and even more, he completely redesigned the layout of the whole shop floor in conjunction with the installation of the third line. The reason for the need of a new design for the roof was threefold, 1) they wanted to decrease temperature at the shop floor with 10 to 20 degrees Celsius (during summer the temperature inside can reach 70 degrees Celsius), 2) they had to stop the leakage of SO2 that permeated through to the office wing when the winds outside blew from certain directions, and 3) the corrosion damages of the roof was unacceptable, wholes was detected and parts could start falling down. The changes in the layout of the shop floor were substantial, including that the location of the cooling and packaging area was exchanged with the metal stock area, the restrooms were moved so that people escaped all the noise and could go outside to smoke (so smoking got prohibited inside), and several other ingenious changes. A much more smooth, efficient and safe U-turn flow through the production process was the result. Interestingly, this implies that major

improvement changes and modifications to the original design made by the world-class engineering consultancy of Hydro Projects (HTP at the time) were carried out locally. In figure nine, the plant layout drawings before and after the upgrade project is conveyed.



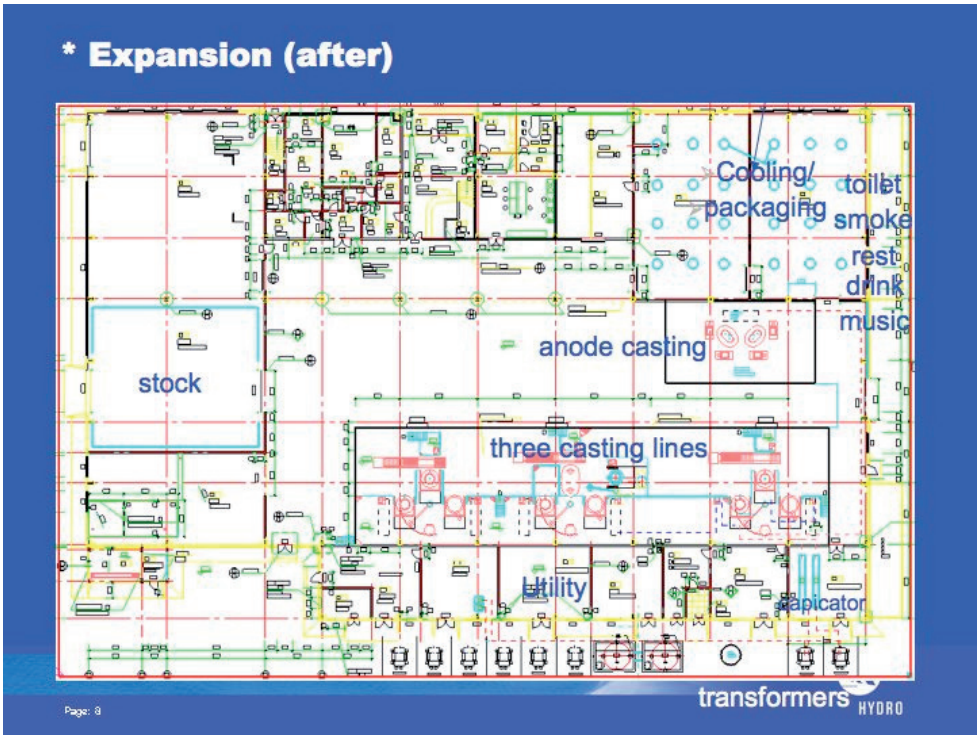


Figure 9. Drawings of the layout of the plant before and after the local upgrade project. Major changes ensued. I have indicated some of them by writing on top of the drawings (Source of drawings, Hydro).

The approach to the upgrade project was circumspect. The maintenance manager in close collaboration with the management team and the GM planned and accomplished it together. The main pillars of the approach consisted in comprehensive management, fostering close collaboration in the management team and tight relationships with contractors, and securing a safe working environment through a special focus on the physical facilities. Elements in this approach was to give all the sub-contractors involved proper and thorough HES training, securing access control, follow-up checks, safety guaranties, and a detailed system of fines for breaking safety rules. They had training records of all sub-contractor employees performing work at the site.

The training consisted of the following major parts: a) introduction to work tasks, b) common safety requirements (detailed on different activities), c) tool risks and requirements, d) utility cut procedures, and e) other means they pursued were: site check records (plant managers controlling the site), work meetings with sub-contractors, utility cut records (predictability of when power was shut on and off for example), and they had logouts and tagouts (labels attached to switches and buttons telling others not to touch), work permits and work marks (physical signs telling people where to go and where not to go). Issue also taken care of were securing safe facilities related to aspects such as enabling all equipment the sub-contractors used to be solid and unbroken, like ladders and scaffolding, and making sure the facilities were well protected (such as machines and cables).

The list of fines that were given to subcontractors for breaking the safety standards were the following: don't wear safety glasses (50 RMB), don't wear helmet (50 RMB), don't wear safety shoes (50 RMB), bad scaffolding (100 RMB), bad feet of the ladder (50 RMB), don't wear safety belt (50 RMB), do not use working clothes (50 RMB), not bound gas cut bottles (50 RMB), presence in forbidden areas (50 RMB), use of Hydro equipment without permit (100 RMB), do not throw garbage in the right boxes (200 RMB), smoking and drinking in wrong places (100 RMB), do not obey work permit (100 RMB), site is not tidy (30 RMB), the facilities and tools not good enough (50 RMB), and lastly, breaking of remaining safety issues, not listed but that must be obeyed (30 RMB). The final point on the list reads, "if someone do not obey and change, the person will be sent away".[73] Sent away from the plant, that is.

They had to give more than twenty fines in total, and the most common fines were related to the glasses, the bottles and the safety belt. No persons had to be sent away. That is, the maintenance manager at one incident had to fine a sub-contractor who nonetheless refused to change his behavior. The manager got angry, he explained later that this was regrettable behavior from his side, and the two of them sat down and

[73] The list is sought accurately represented as written in Chinese and translated by the maintenance manager himself.

talked things trough. The end of the story was that the subcontractor became a champion for the safety regime.

The final result was outstanding. The project was accomplished without any major hitches. No serious accidents happened, the project finished before schedule, below the already very low budget, reaching full capacity before schedule, and the ventilation was fixed (no more SO2 in the offices) and, most importantly the temperature sank with about fifteen degrees at the shop floor.

Several other signs of the turnaround were also present. For one thing, the production and maintenance managers were engaged to help their experienced sister sites in Europe to improve quality on certain alloys and processes in production. The production manager was also sent to a seminar at the corporate headquarters in Europe as one among an exclusive group of the "young and promising managers" of the Hydro Aluminium global system. Peter the GM, had a hard time picking the one candidate he could send, as he himself explained, "it could just the same have been the maintenance manager, the HR manager or the quality manger. I have an excellent team here". Peter praised his team often. "They are extremely capable, the people here. They enjoy much respect in the Hydro system." He laughed one time saying: "The quality manager is the dream woman of the head of the Asia business." The main continuing challenge in Xi'an was on the market side, and market and sales issues were managed mostly from the headquarters in Europe.

Social organization and forms of authority

A vast array of complex issues has been touched upon by the empirical vignettes above, and in the following I will reflect a bit further on some of the most significant ones. When a "global" company, global in the sense that it may actually operate throughout the whole world based on managerial decisions, chose to venture into China, a realm of the world with a significantly different cultural history than the company's home base in Norway and Europe, the intersections between its ambitious efforts of classifying and

standardizing the practices and values of the new emerging venture, and the local cultural and knowledge traditions, spurs both homogenizing, replicating and heterogenizing practices and cultural forms.

Take for example the efforts of standardizing and implementing abstract legal systems of "proprietary technology", "copyright", and allegedly universal notions of "safety". In a "mongrel" Western/Chinese cultural context these issues are far from straightforward. As the notable Chinese anthropologist Fei Xiatong[74] (1992), trained by Malinowski and the Russian anthropologist Shirokogoroff, argues about social organization in his comparative anthropology: China is best characterized by "chaxugeju" – an untranslatable conception unfamiliar in the west. Chaxugeju, usually tried translated with "differential mode of association", may be described as the egocentric system of social relations connecting people in multiple ways and at the same time placing different but precisely explicated moral obligations on each person in each particular context.

While Fei Xiatong describes the Western societies as being produced through "organizations", much later a slogan made famous by people like Drucker (1993), based upon the notion of the autonomous individual with its legal rights and responsibilities towards the state, in China he outlines a very different logic. In China he describes society as being produced through the basic concept of "chaxugeju"; not discretely delineated organizations, but overlapping networks of differentially categorized social relations, were the self is not realized through autonomous individuals but through relations. And these relations display four network characteristics: First they are discontinuous. Society is not collectively organized, but centered on the relational networks of each person; they are thus "egocentric-relational" networks. Secondly the network is defined by dyadic social relations prescribing ritual conduct, especially

[74] In describing Chinese social organization I rely heavily upon Fei's work, because it is widely accepted that in the Chinese context his work possibly more than any other illustrates the power of anthropological field studies, and, although not concerned with disciplinary boundaries, also that it represents perhaps the closest thing China has come in developing a social and cultural anthropology of its own. For Fei, anthropology stands for a combination of functionalism and holism, first-hand field work and qualitative methods (see Pieke 2005).

personal obligations towards the other. Thirdly the networks have no explicit boundary, and finally the moral content of actions is constrained by the relationships and are contextually determined. Moral conduct is seen as decided by the situation at hand and the social categories of the present actors rather than by abstract moral standards which autonomous individuals are to follow beyond time and context. For example Shun, a legendary emperor, was morally obliged to flee with his father, a murderer, to escape his father's arrest.

Not being familiar with Fei Xiatong's work, the most experienced Hydro manager in China found this outline convincing, when he commented on it: "Ever since my arrival in China I've had exactly the same understanding about fundamental traits in Chinese relationships". Nevertheless, on such a background Hydro and other global companies with "western style" abstract conceptions of corporate social responsibility, of health, environment and safety, of property and copyrights, of general management principles and general "good conduct", arguably made little sense if not exemplified and detailed in concrete situations, relationships and practices. Take for example the notion of corporate social responsibility. One local manager stated: "When they ask us to report on what we do in corporate social responsibility, it is very difficult to grasp for me, to get the idea of what they want from us".

The interpretation of these differences may very easily, of course, become a discourse of Orientalism/Occidentalism (and reverse versions of both). I am well aware of the gloomy possibilities portrayed by Pieke (2005), when he states that there exists no anthropology in China, mainly because it lacks a comparative perspective, and until it does, he argues, we are left with either indigenous stereotypes of Chinese culture or alien, Western anthropological ideas about China. I am, however, not trying to do an ethnography of Chinese "society or culture", but try with the best available concepts in hand to put some of the particular communicative actions and thus technology of enchantment efforts (of among other things commensurating culture) of the Hydro projects in a (meta)cultural perspective. Nevertheless, critical reflection on this matter is self-evidently necessary. How clear for example is the concept of corporate social

responsibility in the "western" context? Is it easy for anybody to comprehend the idea that the corporation is invested with the legal status of a person, rights and responsibilities and all, regardless your ideas of what constitutes an individual? Or how about showing up with the "Chinese" concept of "endurance" on the doorstep of a local American business, and asked them to measure and report it to corporate management?

Nevertheless, the situation described above resulted in a felt necessity by the expatriates that they had to detail and explicate everything out, and this in turn was a continuous frustration to Hydro expatriate manager's and other "global company managers" with which I spoke. The expat manager's implicit assumption was the notion that general guidelines on the most important matters would suffice, and be appropriate, so that the local people could adapt it to their specific circumstances. Perceptions of the Chinese were, as illustrated earlier, somewhat paradoxical, embracing at the same time the idea that getting them to do something they needed to be spoon-fed everything by recipe's or detailed procedures; but at the same time they were unpredictable and inventive. Metaphorically somewhat like conceptions of children, or like robots with creative imaginations. To these more or less implicit pejorative and reified cultural perceptions, the Chinese managers themselves would to some degree agree, but possibly not wanting to venture into any argument they often talked about the need for expatriates "to understand Chinese ways, people and culture" (for an example of the "opposite" process, of Hydro Chinese managers' efforts of interpreting and reifying Norwegian culture and managing practices, see chapter nine).

What the case has moreover uncovered is the significance of investment projects as unique social or cross-cultural encounters. Overdetermined notions about "Chinese culture" or "Hydro culture", from any actor's perspective, might function as a barrier towards constructive communication and interaction in the investment projects. In the cross-cultural encounters such investment projects occasion, the Xi'an case illustrates that more open, flexible and dynamic notions about culture are most fruitful for constructive collaboration and a better result project wise. The Wuxi case, on the other hand, illustrates how cultural notions might contribute to the breakdown of new

ventures (Røyrvik 2008). As illustrated in chapter six, such cultural encounters might be facilitated and enabled in various ways, in more indirect forms of managing I will later call "infra managing", *managing from behind and below*, but the case material indicates that more direct and explicit forms of "cultural management" might rather have counterproductive effects, because it reifies inter-communicative cultural processes and unique cultural encounters and thus might turn them into potential stumbling blocks.

As an example, the issue of safety, "the dial-tone before we start to talk about anything else", as one manager put it, might be illustrative. General and abstract reasons for performing "safe" (safe as in "Hydro safe") on the shop floor was seen as a challenge by Hydro expats and local arbiters the first years. The most valued justification for safety in Hydro is "respect for life", a concept that after a lot of practical cramming ringed really true among the employees in Xi'an. But it is not only this morally "noble" ideal behind the focus on HES. Experience shows that plants with high levels of HES, housekeeping and tidiness are also the ones performing best in terms of quality of production and of the metal products.

Examining the Hydro near history confirms our observation. As it turns out, Hydro might be said to have been operating itself on the alleged "primitive level" of the Chinese until the mid- and late 1980s. As one manager described the situation at one of Hydro's most famous production sites: "I remember the first time I visited Herøya, a cold day of January 1986, together with Per-Ivar Åbyholm… I thought he had brought me back to the 19th Century!" (Quoted in Lie 2005: 275). The major turnaround at Herøya was preceded by similar major operational changes at Karmøy, and later at many other Hydro sites (Sagafos 2005: 269).

One may thus wonder about why there are no standard and comprehensive safety courses compulsory throughout the contemporary Hydro Aluminium organization. They have certificates for driving trucks, but none for handling hot metal that under the wrong circumstances can blow up and kill people. And magnesium is a highly reactive metal. Of course there are safety seminars and different safety workshops and tests, but these are mostly performed locally and are thus highly person

dependant. In some respect we might thus say it is treated in an ad hoc manner. The "instrumental reasons", the realization that a "safety culture" seem to contribute strongly to productivity and the production of high quality metal, should also add to the question of why not a more rigid standardization of safety courses has been implemented.

The Chinese's conceptions of safety and their approach to their own work environment, perceived as "primitive" by many of the expatriates, need to be qualified with Chinese ideals and knowledge traditions, as emphasized by the Chinese managers. Examples of different conceptualizations were their emphasis upon values of modesty, of robustness and non-complaining, and of endurance of tough work, hardships and pain. Both the use of and the lack of understanding of the "Chinese ways", as the local Chinese management expressed it, led to as we have seen a series of different approaches to leadership. Nevertheless, the local Chinese managers and workers and the Hydro expats found common ground in various basic values related to respecting each others perspectives, taking each other seriously and in respect for life and health. With a collaborative approach this common ground emerged also into work practices and routines.

This leads to another major but related theme growing out of the diversity emerging in the hybridizing Chinese/Western process of erecting a new magnesium alloy plant in Xi'an: The assumptions about and the performance of authority. Remember our point of departure in investigating technologies of production and enchantment, seen through managing actions as various instrumental and complex causal ways being *co-responsible* in the purposeful "bringing forth" of projects; in creating, controlling, enrolling and strategizing to interpret and master both nature and culture to realize the goal of a new investment project. Authority is linked with power, creation and "occasioning", among other things.

Organizing authority

In Chinese society control and power may also be seen traditionally to be constituted through rituals prescribed by *chaxugeju*, that is, order, harmony and prosperity are achieved through people's loyalty to their social obligations in their network of social relations. The obligations to each category, like son towards father, must be explicated in every detail, be taught and corrections measured out if learning fails. The unit of control is the dyadic relationship, not the autonomous individual "of the west" who is expected to exercise his will and where authority is based upon the "rule of law". In the latter case the unit of control is the state (with its monopoly of violence to back it up), the constitutional embodiment of the people, the highest form of organization and the only one with mandatory membership, thus the ultimate power container from were everything else may be derived. Somewhat counterintuitively, in some respect in China the state has always had a much more modest role, as the saying goes; "heaven is high and the emperor is far away" (cf. Scott 2004).

When the unit of control is the dyadic relationship the whole network of the person is implied if someone does not perform satisfactorily. This was illustrated for example when the Chinese Chief Rep., and later GM, said that the Chinese are people related and not system related. Also illustrative is the fact that on all three of the Hydro Aluminium plants I studied in China, a network of specific relations among management emerged, contradicting or supplementing the formalized organization – the "chain of command". For example in one of the plants the HR manager became the node almost all other managers went through to communicate with the expatriate GM. The GM found it odd at first, but realized it was very effective. The management meeting is another instance, were all of the expatriate GM's felt it was difficult to engage the local managers in an "open reflexive dialogue". The local managers explained that this is not the Chinese way of doing it. To get all their reflections and comments some of the GM's learned that they had to talk with all of them, or the central "nodes in the network", one on one afterwards, and also preferably before the meeting.

Thus we might say the means of control to some degrees are localized in the institutionalized network of ego-centric relationships, rather than in some perceived collective institution or abstract laws and rules imposed top-down. For example, political institutions in China may be said to work more from the "inside-out". Control is thus a shared responsibility, were people monitor each other, a principle we know Mao utilized to the extreme (cf. Chang and Halliday 2005). In this conception the ideal government should be based on these principles of power and rule, of "wuwei", to do nothing. If society works well the need of government will not arise. Were the western manager, directed by the imperative of action rules by solving problems, the Chinese leader should rule by "not having problems" (Sørhaug 2004). It is in this respect we must understand the often cited Chinese conception of authority as "rule of man" (versus the western "rule of law"), the former which could preferably be termed "rule of ritual" (Fei 1992). The challenges faced by contemporary China to reform its jurisprudential system to conform to the "global standards" of for example WTO are thus formidable.

At the Xi'an plant several regimes of authority succeeded each other by the substitutions of the GM's, and several types of authority were and are exercised side by side. The first Chinese GM was, based on the managerial standards of Hydro executives, probably "too much" characterized by the logic of "rule of man", noted also by some of the other actors in the start-up enterprise. Notwithstanding the frequent misconception by the expatriates of confusing "rule of man" with the Machiavellian inspired western notion of the leader as the independent and cunning "strong man". In the eyes of the westerners the first GM built his own "empire" and left the operations to "solve itself". The second GM's style of authority was part constituted and part product of her being very knowledgeable about the "Chinese ways". She worked hard and competently to implement a "system-based" practice at the plant, both because she knew the need for explicating all kinds of employee obligations and responsibilities in detail, but also to try to "remedy" the "person-centeredness" of the Chinese knowledge tradition. This system-based approach she had learned through work in some of the best

performing global companies in China, but she found that this was a practice also, but from another angle, quite unusual to the "Hydro managerial culture". Here we might find signs of a *particular* type of Norwegian and arguably Norwegian managerialism (see chapter two and eight).

The Hydro style(s) of authority from their Norwegian home base has at least since the 1960s been characterized by a participative management style with plenty of room for delegation; an engineering, development and project oriented culture focusing on production and technology,[75] and in her view, too little systematics related to the management of all other aspects of erecting and operating a plant in China. Thus, she introduced practices and approaches, "management systems", new both to the "Chinese" and the Hydro Aluminium "traditions". Both "sides" had to be adapted, transformed and re-invented to meet the requirements of the context. Interestingly, one of the key propositions of global "managerialism", as it originally emerged out of American engineering-traditions in the late nineteenth century was that of "systematization" and "standardization" as social practices and cultural idioms (Shenhav 1999).

As we have seen, in the Xi'an case different types of systems focus was advocated from the Chinese and the European, mostly Norwegian, side of the project. While the Norwegian side, mostly comprising engineering managers, was most concerned with work standards and procedures in production, the Chinese side introduced most of the other management systems thinking, introducing systems related to all aspects of running a plant. Referring to the outline in chapter two, Hydro managerial culture seems also in its contemporary "glocal" project efforts to be characterized by an idiosyncratic managerial culture, informed by several of the various historical trajectories of mangerialism; in particular what must be seen as a rather specific "Norwegian model", characterized by democratization, participation, delegation and self-managing (see chapter two and eight).

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[75] See the three-volume work documenting the one hundred years of Hydro's history from 1905-2005 (Andersen 2005; Johannessen, Rønning and Sandvik 2005; Lie 2005).

The third GM was hired as a "Hydro-man" to enforce by all acceptable means a homogenous Hydro Aluminium standard of safety. This he executed based on a quite rigid system of punishment and reward, somewhat unfamiliar to Hydro Aluminium practices elsewhere, and more based upon a perceived notion by Hydro executives of how authority must be executed in China to be effective. A conception of rule with historical roots in the legalist philosophy, upon which the first emperor Qin built the unified China. Safety standards were implemented, but as some of the local managers noted, the same result may have become a reality also by other means.

Much of the same form of authority was also executed by the Chinese maintenance manager when working as a project leader of the upgrade project, at least with respect to his system of punishment. This he did working alongside the Peter, the fourth GM, the man arguably most responsible for the turnaround at the plant, especially the change into producing world class quality alloys. He had an unwavering belief in the democratic, participatory ways of leading, practices he learned in the Hydro magnesium plant at Herøya, Norway, the plant with arguably the historically strongest position with such forms of management. The delegation of the upgrade project to the maintenance manager proves his steadfast belief in this model.

He was very much appreciated by both managers and other staff at the plant, and many of them emphasized this management style and leader personality as one of the prominent reasons of motivation for working for Hydro. As the local quality manager noted: "I want to learn this style. I always wonder how he gets things the way he want while still being so soft." Some people in the Hydro-China managerial network perceived Peter as a somewhat "weak leader", due to his dialogic, participatory style. When his contract ended, the executive responsible for recruiting his successor said that "now I think the plant maybe even runs too well, the people can get too relaxed, so I think after him we need a more strong one again". Some of these considerations were also reflected in the diary entry of the GM in Suzhou. On June 10, 2005, he wrote beneath the heading "… Punishment or Recognition…" the following:

> "Now after 8 month living and working in China I am on the way to change some of my basic believes. To give people freedom to develop does definitively not work. People's creativity to find out what is expected, or to think that they are paid to work for a certain performance is not strongly developed. This is even a too nice statement. But I think also that it is never the peoples own fault only. It is a surprise to me that even people with a university degree are to be told what is the issue. Discipline is weak and excuses are found for everything quickly. Comprehensive thinking is probably the most strange an animal to them. They always react to what has happened and very seldom I could find proactive measures and actions. Now my people had a long period of training and are not used to a produce and perform. We are now in a critical phase where we have to make a mini turn around form not respecting clear rules, bad habits and no time pressure to a performing organization. What more surprises me is the resistance of the labor force and the reasons brought forward as excuses. There is no doubt that we have to take some measures to show the people that we are not only here to joke. From my fiends working in other foreign companies I heard that people respond very well to a tough management style. All the recent experience has seeded some doubts in my belief in a motivational management style."

In his last diary entry, on August 25, 2005, he laments on some of the same issues:

> My first enthusiasm for the Chinese managers and operators has cooled down significantly, and in a way I am more prepared to do in my home culture. In my way to lead you have to lead through yourself or you relay more on a team. I have chosen the second one because I feared that the first one would not lead to success in the Chinese environment. The issues are always the same, and for my own certainty I have checked with other expat colleagues of foreign enterprises on the situations. Very little own initiatives, little ownership and a tendency to cry instead of facing the problem and look for a solution. I like to admit that it's not a generalization, but we at least, in our company there are probably three to five exceptions from the total 80."

While reading through a draft of this chapter, one of the experienced Hydro expatriate managers in China noted the following in terms of assessing the type of work conducted by the Chinese employees:

> "The Chinese are extensively creative, to some extent also innovative, but they do not like to "work to rule". They consequently have some difficulties in combining creativity and systematics. They are ad-hoc oriented, just-do-

> it, and fix the deviances later if it creates problems. The western tradition exhibit an industrial approach, with "plan-do-check-correct", while the Chinese tradition is more "do-repair-do-repair". A consequence of this, is a problem with the conception of preventive maintenance. The very philosophy is alien. "If it ain't broke don't fix it", works well. Also, relating to the experience of not taking initiative to changing light bulbs and the like; they only do what they are explicitly told to do. "You cannot be punished for something you do not do", I was told by one of my experienced colleagues in Beijing. He had learned that at school in the 1980s. If they are told to "take initiative", they more often do it on more or less random issues, to show they are "taking initiative", rather than doing it in relation to something that fits with an overarching strategy or plan for the year."

A similar concern related to "preventive management" was often expressed also in the Azuqueca project. It seemed, however, that in China the most positive experiences was those of Peter in the Xi'an project, and later as GM. He often praised his team and underscored the necessity of not underestimating the local employees and treating people decently. Here is a collection of just a few quotes he made during our conversations:

> "You have to respect them as people. They need no authoritarian leader, but someone with production experience, not only to control. These people are self-reliant and need leaders with consistency in their behavior and approach. Someone who reacts when people take shortcuts, when they compromise on safety, trickeries and so on and so forth. They have to go. If you can get to those five percent you strike it lucky, and everybody gets happy. I think we have managed that now, more or less. I am not sure the Chinese are that different from us. They must be treated with respect. If you find the right people they have incredibly fast response-times, no limits, they are happy and enthusiastic. It takes very little both to please and disappoint them. And they are excellent in Powerpoint… If you don't find the right people, it is frustrating. All in all I have few problems here in comparison to things I have experienced other places."

Both the main themes discussed above, forms of social organization and forms of authority, illustrate the ever-present dialectics between person and institution. From the institutional theories arising from social constructivism (e.g. Berger and Luckman 1967), we know that institutions are social assemblages, patterns of communicative

interaction made durable by repetition, symbolic instantiations and material manifestations. The imprint of specific persons on the course of events is, of course, strong, but in the case description we have seen how they both mobilize and are mobilized by institutional networks or distributed social "fields". For example, elaborations were made on how the Hydro HES *institution* in many diverse ways was enabled, enforced and re-invented locally. The institutional "structure" of HES practices is not just "rolled out" or implemented, but still an institutional stability as being "Hydro HES" is reached in a completely unfamiliar environment by newly employed people. Furthermore we have seen how the HES institution has a spillover effect on production. Before HES is institutionalized, quality of production seems to be both politically and practically close to impossible.

Likewise, we have seen how the institutionalized forms of authority in Hydro Aluminium has been contested both from within the organization and from the outside. The particularities of establishing a plant in this cultural and socio-technical environment produced a multiplicity of perceived constraints, calling for non-institutionalized actions by key actors. The succession of the authority styles of the GM's, for example, may be interpreted as a step-by-step institutionalization of a Hydro Aluminium "attractive" (as perceived by managers and employees) power structure, which history proved to be a success. I do not, however, believe this to have been carried out by a long-term rational plan. Rather, as learning were gained, adaptations and changes were made by local and expatriate managers out of an "art of the possible" approach, calibrating at their best abilities the optimal match between available resources, accumulated knowledge, and challenges at hand. And all the time being sensitive to and enacting both the local and the Hydro "translocal" (Hannerz 2003) circumstances that continually re-generate the criteria for what is recognized as valid forms of authority and organzing, of "occasioning" and "bringing about" the desired project and plant goals.

Translating and transducing

Based in the above exposition simplified notions of the "standard view" of technology needs to be reframed. Based in the ethnographic descriptions, we might rather ask questions like what were the contents and types of inscription practices performed, by which culturally and politically positioned human beings, with which specific competencies, visions, values, tastes and motives, and for what kinds of perceived ends and use situations? How is the technology re-inscribed and translated to equally, but differently positioned and situated people with very different cultural backgrounds and world-views? Paraphrasing Latour, technological *translation* involves "… displacement, drift, invention, mediation, creation of a new link that did not exist before, [which] modifies in part the two agents" (quoted in Czarniawska and Joerges 1998: 208). The argument is that the attractiveness of the concept of translation is that it comprises what exists *and* what is created – and thus provides the tools needed for understanding organizational change.

We may also ask what kinds of cultural forms and modes of epistemologies and ontologies are played out, repeated, maintained, modified and transformed through the efforts of "moving" technologies, "best practices", abstract standards and management styles through the cultural contexts from the "occident" to the "orient" and back again – transfixed through the global assemblages of projects. And not at all only in cultural geographical terms, but strongly through the same rhetoric that establishes the mediums in which the travels and translations take place, through abstractions and stanardizations of work, communication and "culture". It is constituted through the encounters and negotiations of "us" and "them", the "Chinese" and the "Europeans", and through the mingling and hybridization.

We must ask how this translocal network (Hannerz 2003) of people and technological resources that are mobilized in such project start-ups are situated in particular contexts shaped by the flow of a multiplicity of personal histories, knowledge traditions and socio-technological regimes. The ambition of straightforward technological transfers and replications, at least in knowledge intensive operations,

proves to be founded in naïve epistemologies. Efforts of standardization and formalization, reassembling the social in project work life, seem to create its opposite in the same process. Indeed, we may consider the rhetoric of different types of management, and translations of management practices, as a form of "technology of enchantment", described by Gell as "the psychological weapons which human beings use to exert control over the thoughts and actions of other human beings" (1988: 7). For Gell this is the most sophisticated technology we possess, and under its heading he places the technical strategies of art, music, dance, rhetoric, gifts, etc. (ibid.).

If these "extended", "superior" or "cultural" standardization technologies in a certain sense are a marriage of the technology of production and the technology of art; in a form of conceptual time-travel back to the Greek antiquity notions of "poiesis" and "tekhne", we have discussed how differential knowledge traditions have been mobilized, bastardized, reshaped, re-invented and changed in these global flows. The spreading and "transfer" of the Hydro Aluminium "technology" is conducted through a series of small steps, moving from and in several directions, and altering and displacing, changing and churning the objects at hand, and simultaneously influencing and re-forming the subjective actors occupied in the processes – resulting in a multiple transfusion or transduction of re-generating and re-constituting hybridized techno-social vortexes.

From socio-technical to ontological truth

Based in the ethnographic discussion above, we might also reformulate some of the even more fundamental questions related to ontological question of the "nature" of technology, and possibly also the opposite, the technology of nature. In our case, what kinds of instrumentality, causality and modes of revealing (ie. truth) are we dealing with here?

As indicated above, Heidegger differentiates between handicraft technology and modern technology. Modern technology is also revealing, however, it is a revealing of

another kind. According to Heidegger it is not bringing-forth in the sense of 'poiesis', but a challenging, a calling-forth, summoning, a positively demanding, provoking kind of revealing. As Heidegger notes:

> "The revealing that takes place throughout modern technology has the character of a setting-upon, in the sense of a challenging-forth. The challenging happens in that the energy concealed in nature is unlocked, what is unlocked is transformed, what is transformed is stored up, what is stored up is, in turn, distributed, and what is distributed is switched about ever anew. Unlocking, transforming, storing, distributing, and switching about are ways of revealing" (1977: 16).

This description is surely precise for the situation at hand involved in managing light metal production "worldwide". In designating the revealing taking place in modern technology as "Enframing", it can be directly linked to the *managing* actions (and fourfold causation) part of our material. As noted in chapter two, managing emerged from engineering, and as such managing is all about modern technology, and thus about Enframing. As we saw above, the defining characteristics of Enframing is about reavealing as "ordering", "setting-in-place", "challenging-forth", stockpiling energy as "standing-reserve", and so on and so forth. Heidegger goes on to say that:

> "… the revealing never simply comes to an end. Neither does it run off into the indeterminate. The revealing reveals to itself its own manifoldly interlocking paths, through regulating their course. This regulating itself is, for its part, everywhere secured. Regulating and securing even become the chief characteristics of the challenging revealing" (ibid.: 16).

Here then we can see more about the *nature* of managing in its engineering tradition; as managing modern technology the nature of managing is very much about Enframing as well. Managers are thus to be seen as revealers in the Enframing sense. In our ethnography we have seen the massive efforts of classifying, formalizing and standardizing both nature and culture; in efforts of interpreting and mastering both. Now we can see that the nature of these managing efforts are forms of regulating and securing the "challenging revealing" (Enframing). As we have seen, the "assembled" projects and products of these actions are expressed as forms of both homogenizations

and heterogenization. This can be understood because of the never-ending nature of the challenging revealing process.

The answer to the question about the intimate relation between not only technology, but modern technology and art, hinges upon our conceptualization of nature. Different conceptions, or differentially social constructed concepts of nature, guides our conclusion. Heidegger seems to imply some form of romantic Rousseauist idea of the 'good nature' in his distinction between handicraft and modern technology, and that this setting-upon, ordering and challenging forth of the standing-reserve is a form of revealing that is oppressive and obtrusive towards nature. Heidegger was thus arguably a pessimist in terms of modern technology. However, taking into account the other perspective of nature, of the Dionysian, mad and pathological side to nature, conveyed in works like de Sade, Freud or Paglia, other possibilities arises in the assessment of modern technology and its conceptualization as "poiesis" and art.

Elements of a differential ontology

The socio-technical and actor-network approaches have been, and still are, ambitious cross-disciplinary endeavors covering several of the traditionally delimited sciences, most notably natural science, engineering and social science, each covering different domains with a different set of truth criteria and validity claims. In such diverse waters it is easy to get lost in epistemological confusion. Wisely, and somewhat contrary to the associations provided by titles like "The social construction of technological systems" (Bijker et al. 1987), the main crux of the tradition, and although Latour (2005) denies it, seems to have been thoroughly deconstructivist. And deconstruction is useful, as hopefully shown above, but only as far as it goes. The end result of the exercise apparently seem to be, to disclose it somewhat crudely, an endless regress into infinite translation processes of a heterogeneous compound of human/object/social/technological all mixed up. Innovation (or creation and bringing forth) and distribution seems to get equal statuses, distribution is innovation and

innovation is distribution – everything is a recursive mix that leaves us discontented and with a question of where it leads.

To disorganize and clutter everything up, and bring human action back into the equation of technological systems (and likewise is acknowledge the substantive role of materiality in the realm of technology), is perfectly legitimate, and have possibly been necessary to try to dispel the gospel of the "standard view" of technolocial diffusionism. As every new "paradigm" or field of inquiry, in addition to its added insights, it also always has its intrinsic limitations. Somewhere along the unfolding of the new paradigm, when time is due and the field has "flooded its own boundaries of validity", its inherent restrictions becomes visible.

One of the problems seems to be a double-edged challenge to the "socio-technical" perspectives: one the one hand there seems to be a lack of a coherent epistemological perspective, and not the least ontological, and at the other hand, all these diverse processes going on are pressed together in what we might call a "multiple monistic" and "conflated" epistemology (of translation). For example the *onological politics and methodology* of Law, although seeming like a good idea, concludes that: "There *is* no universal" (p. 156). And furthermore if the universal disappears in his ontology, he declares that so too does the local, and then: "… we are left with situated enactments and sets of partial connections" (p. 155). The key words in Law's agenda is according to himself: "Enactment, multiplicity, fluidity, allegory, resonance, enchatment" (p. 154).

Like parts of the "narrative turn" in social science (see chapter four), the socio-technical tradition seems to share some of the shortcomings often assigned to postmodernism (constructivism and deconstruction) of a collapse back into a *pre*modern *undifferentiated* view of reality,[76] although Law refutes that he is advocating a "… collapse to some undifferentiated utopian social and technological order" (ibid.: 155). In my view the "ontological politics" in the sense referred to above leads to the conflations

[76] The so-called Sokal-affair would be a good illustration, see "The Sokal Hoax: the Sham That Shook the Academy (2000), ed. Franca, Lingua.

discussed in the introduction, of the problems of keeping both a wholistic and integrating view while acknowledging the multitude and diversity of phenomena investigated. There seems in this field to be a need for a *differential epistemology and ontology* that both differentiates and integrates.[77]

As reflected in the discussion on forms of rationality and the differentiation of the value spheres in modernity (see especially chapters one, two and eleven), a brief genealogy of the western tradition of thought could best be described through an understanding of the dynamics of "the big three" (Wilber 1996). According to the major theorists of modernity, the biggest achievement of the modernization processes has been the differentiation of the value spheres into the art, moral, and science domain on a "large scale" throughout society, particularly illustrated by Kant's Critiques. What has been called the dignity of modernization. The historical enormous beneficial gains of this differentiation is not to be discussed here, the only major point for now is that the various domains were "liberated, and "set free" to seek their own paths for knowledge and truths without disturbances, oppression and punishment form the other domains. But, as the "post-modern rebellion" conveyed, the differentiation of the big three also had a downside. Differentiation came with dissociation, and, not the least, according to modernity critics like Weber, Habermas and Foucault, the subjective and intersubjective domains could be seen as being reduced to empirics, to a chain of "its". Thus "… humans became objects of information, never subjects in communication" (Wilber 1996: 245).

This was the colonization of the big three into the big one. Thus, the postmodern rebellion was perfectly legitimate, for example through the narrative turn in social science and the socio-technical insurrection against technological determinism. But modernity critics like Habermas voices concern that the rebellion and confusion has

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[77] A more detailed and deeper outline of my perspective on ontology is provided in chapter six. I thus support that the issue of ontology is raised by for example Law (2004), and agree to some extent to the procedures implicated by it, but disagrees with both the ontological method's point of departure and also the result in terms of an excessive post-modernism. As outlined in chapter five, the actor-network perspective on ontology, as proposed by Law, seems at the basic level to be the inverse of what I am advocating.

gone too far. Modernity managed to make the differentiation, earlier the three was allegedly to a large extent *undifferentiated*, but was not able to *integrate* them. The major post-modern project has thus, in spite of all their differences and the extreme variants of constructivism, has been to challenge the hegemony of the Enlightenment representational empiricist "its" paradigm, and to "balance the scales" between the big three, and properly integrate them. However, balancing is a fine art, and the socio-technical tradition seems instead of differentiating *and* integrating, to some extent to end up in *disassociation* or return to epistemologies of *undifferentiation.* Illustrated for example by the quote friendly title of Latour's book "We have never been modern" (1993). The major challenge seems to be to carve out an ontological landscape accommodating both differentiation and integration, both plurality and multiplicities, and unity and undividedness. Johansen (1991) has ventured upon such a task, describing aspects of such a landscape both and a "differential epistemology", and, inspired by the quantum physicist and philosopher David Bohm, a "monoplural ontology".

Johansen takes as a point of departure Bateson's definition of information as "a difference that make a difference" to some subject. Events in the world of people have caused these differences that make a difference, such that the event serves as the answer to the difference (Johansen 1990). These differences (that make a difference) logically needs to be considered as punctual and discontinuous (otherwise we end up in endless regress), and thus logically operates without expiration in time. Since all descriptions or understandings have expiration in time, they could be considered continuous. Discontinuity makes levels, orders or hierarchy. Any dynamic systems description may thus be plotted along the horizontal axis of continuity and the vertical axis discontinuity (ibid.). An investigative object, like cross-cultural technology "transfer", could with such a framework be differentially plotted, and not be relegated to either the continuity axis (diffusion, spreading) or the discontinuous axis (seen partly as "translation" in Latours calibration of technology as "displacement, drift, invention, mediation, creation").

We contend here that the translation stance is not grounded thoroughly in an epistemological framework that can accommodate integrated differentiality. Thus, "translation" is a heterogeneous blend of the continuous and discontinuous (change) axis. Arguably a more aesthetically clean and analytically sound exposition would be to unfold the phenomena along both axis – with the end result of a differential discription of technology in terms of for example the mutually constitutive concepts of continuity and change. It could also enable aid in our more practical challenge of explaining *both* innovation and distribution of technology in the same analytical framework. If we could relegate concepts like transfer, diffusion and translation to the horizontal axis of continuity, and use the concept of transformation to the vertical axis of discontinuity (change) the model would be neater. After doing so we could explore all the different translation (continuity production) mechanisms on the one hand, and the mechanisms and different orders and hierarchies of transformation on the other – while keeping their interrelationships illuminated.

Thus, when talking about packing/unpacking, and inscriptions and re-inscriptions, the descriptions need to be more precise on how and were along the two axis they are moving, and about which types of operators are at work. Our limited and Newtonian understanding of causality should be challenged. Of acute importance is relating the subject matter to all the *different* types of causality at work. Alluding to the fourfold causes of Heidegger which in synchrony "occasions", as described above in the discussion of technology as instrumentality, causality, and revealing; Johansen (1990) has outlined a typology of *eleven* fundamental forms of causality, operating in various configurations along the two axes. The typology comprises the following forms of causality: projective, formal-logical, algorithmic, intra-physical, dynamic, structural, inter-algorithmic, innovative, emergent, dia-synchronic and physical.[78]

The "travelling technology" dispute around innovation (change and originality) or diffusion/distribution (continuity or imitation) may be reframed in the terminology of the old philosophical problem of *causa prima* and *causa finalis*. The first cause or

[78] For concise definitions and a figure outlining this complex causal space see Johansen (2008).

mover and the cause of teleological intention. These two ideas can only emerge as problems, according to Johansen, because:

> "… the causal relations relative form [relative to the particular *description* of the phenomena at hand] is broken away from the particular description that makes the causality meaningful, and which binds its relativity by stating the context by which the relation in its entirety is related to" (ibid.: 103, *my trans*.).

The problem arises because of a lack of differentiation between levels of relativity, and thus, what should count as a "first cause" would vary according to which axis (horizontal/vertical) is given primacy in the description; and furthermore "… according to which other causal relations that are already anticipated in the causal complex of the description" (ibid.).

Seen in this light, both *causa prima* and *causa finalis,* the first and last cause, and by analogy the socio-technical questions about originality (innovation) and imitation (spreading), are thus a *divination* escape from our own insufficient reflection of the epistemological premises inherent in asking the question. It is analogical to the child who asks "… if God created the universe, who then created God"? (ibid.). As we know, the "divination" answer has been a challenge for numerous metaphysical explanations. The tendency of the "divination escape" might be attributed to several constraints in the human mind, among others, an apparent conceptual need and thought-aid in the "first mover" principle. Johansen's differential outline of the complex causality space, seem to be a more overall explanatory manifestation of the considerations on causality, "occasioning" and "bringing forth" made by Heidegger. To plot the genesis of projects that have been investigated here precisely in this casuality space remains however a task for future research.

To get away with a non-Cartesian anti-dualistic perspective of "techno/human and organizing networks", like the socio-technical traditions desires, it is argued here that it is not enough to simply state it or indulge in multiplicities of connections anddisplacements. It needs to be framed in an appropriate "integrative differential" epistemology and ontology. For such a differential description of technology

translations and transformations, not the least the ontological nature of these phenomena, conveyed in an integrated fashion along both dimensions, an appropriate metaphor of "technology transductions" might as noted above be proposed. "Transduction" and "transducing" come form Latin, meaning "to lead across"; to convert as energy or a message into another form. "Transductions" in my use then highlights the conversions and mutual constitution of "materialities and meanings" as it is seen moving across boundaries in a global setting, and thus tries to avoid both pitfalls technical or social determinism. Using the Hydro projects and descriptions and reflections on "technology", nature and culture, has led to philosophical investigations of rationality, epistemology and ontology. We will further these general reflections also in the next chapter. Again from the starting point in Hydro projects, and again with an approach in exploring the "technological" side of projects.

Chapter Six

6. Presencing Projects: The "Social Reality of Construction"

By definition, a technological project is a fiction.
(Bruno Latour 1996: 23)

This is one of those cases where the visible, that which is immediately given, hides the invisible which determines it.
(Pierre Bourdieu 1989: 16)

The universe begins to look more like a great thought than like a great machine.
(Sir James Jeans, quoted in Radin 2006: 146)

He was balled-headed. Vigorous and warm. Impressive. A man of the sorts you would imagine, without ever having met one, was that practical, fair and effective industrial leader. The one who gets things done. He carried weight, radiated natural authority. Still quite young for a man in his position, he had led large projects to success. He looked at me, smiling. We were talking about some of the more subtle human aspects related to managing projects and production. Fortunately he was also a storyteller. Outside his kind of 1950s style Spartan office, it was a cold day in late autumn, and the steep mountains from where quite literally the energy was flowing down in rivers, was already partly covered in snow, and were shimmering visible in the dark day above the roof of the plant. Now he wanted to tell me an anecdote. "I was talking with Thomas, the foreman at the plant, the other day. Thomas was extraordinary spirited. And that is not particularly common for Thomas. He is a calm, down to earth fellow. I am asking him, what the good mood is all about, and Thomas, deeply serious says: 'Today I found myself a tapper' (a highly critical post handling liquid metal flows). 'Oh yeah', I said, 'how did you find him then?'" Now the manager lowers his voice, dramatically as to underline the point; "and Thomas answers, 'I took his hand, looked him for quite some time straight in the eyes, and *saw* he was a tapper'".

> Project: ORIGIN late Middle English (in the sense [preliminary design, tabulated statement]): from Latin **projectum 'something prominent,'** neuter past participle of **proicere 'throw forth,'** from **pro- 'forth' + jacere 'to throw.'** Early senses of the verb were [plan, devise] and [cause to move forward.][79]

The tragedy of big projects

The social life of projects in Hydro provides ample grounds for investigating subtle aspects of the constitution of reality. My own involvement in this realm was spurred, as explained earlier, by the simple yet puzzling questions revolving around why one

[79] New Oxford American Dictionary.

project is a success, the next is not, and the subsequent again a success, and notwithstanding major efforts of interpretation seemingly without any straightforward reasons. In time I learned through the literature on “mega-projects” (cf. Flyvbjerg, Bruzelius, Rothengatter 2003), that Hydro comparably could exhibit a quite impressive track record of project accomplishments (without any systematic statistics to back up the claim). Reccently for example both the largest industrial project in Norway ever, the 66 billion NOK Ormen Lange offshore gas project managed by Hydro, and the 6 billion NOK new Sunndal aluminium plant, the largest and most advanced in Europe, was completed on time, budget at quality.

The “project” has increasingly become the more or less universal way of organizing large portions of work in a globalized industrial production world. It offers flexibility in terms of both differentiation and integration of resources; it is somewhat paradoxical an arena of both creativity, innovation and control; it evolved as a work form from the development of technology and infrastructure after World War II; and seen as a world-wide phenomenon it was especially driven forward in American defense projects, like the Apollo space program. In Norway it evolved especially from shipping and hydropower engineering. The field has been largely dominated by “operations analysis”, and “project control” has been the main idiom, through the steering objects of the “iron triangle” of Time, Cost and Quality.

Nevertheless, reviews of the empirical history of project “performances” reveal a fascinating and somewhat disturbing reality (ibid.). Some spectacular projects with spectacular overruns illustrate a pattern: The Suez canal project had a cost overrun of 1900%, and the Sydney opera house 1400%. See the table below for some other spectacular examples.

Project	Overexpenditure (%)
Suez canal	1 900
Sydney opera house	1 400
The supersonic Concorde airplane	1 100
Panama canal	200
Brooklyn bridge	100

Table 4. Spectacular projects with spectacular overruns (Source: Flyvbjerg et al. 2003).

Looking at some of the large international transport and infrastructure projects, a picture of systematic overexpenditures emerges.

Project	Overexpenditure (%)
Boston tunnel project	196
Boston-Washington-New York railway	130
Storebælt railway tunnel, Danmark	110
Shinkansen Joetsu railway tunnel, Japan	100
Washington subway, USA	100
"Chunnel" England-Frankrike	85
Øresund link, Danmark	80
Mexico City subway	60

Table 5. International transport and infrastructure projects (Source: ibid.)

We might add that public sector IT projects display cost overruns averaging 67 percent (ibid.). Looking to Norway, the large offshore oil projects in Norway similarly, with cost overruns as the norm rather than the exception: Åsgård 18,4 billion NOK, Mongstad 7,2 billion NOK, and latest Snøhvit with the so far largest project overrun in Norwegian history, with 19 billion NOK in overexpenditures. Norwegian construction projects also display a similar pattern.

Project	Overexpenditure (%)
The National Bank Headquarters	160
The New National Hospital	89
Romerikporten	50
The Oslofjord Tunnel	15
The Gardermoen National Airport	-6

Table 6. Norwegian construction projects (Source: Kolltveit and Grønhaug 2004).

The "fatal findings" in historically reviewing large projects performance are summarized by the following: Huge cost overexpenditures have been stable for 60 years, and it is a global and cross-sector phenomenon. The initiators of projects lie systematically and projects are a coctail of underestimated costs, overestimated profits, underrated environmental implications, and overrated economic developmental effects. In sum these huge, complex projects come with extreme risks that are hidden from taxpayers and governments (Flyvbjerg, Bruzelius, and Rothengatter 2003).

In light of these empirical data, Hydro's project record, even without a systematic overview seems indeed to be impressive. At the time of our entrance into this social landscape, with the Azuqueca project, Hydro's former project, however, one conducted in the US was internally depicted strongly as being unsuccessful. However, the reasons for it were not easy to explore. As the saying goes, the suspects of an "unsuccess" vanish rapidly out of sight, and so also in this case. As Gard once noted while we were exploring the subject: "The people in that project have all sublimated". Consulting the dictionary definition they seemed all to have diverted and transformed themselves into culturally higher or socially more acceptable activities. The storyline that seemed to have stuck with most of the actors with which I spoke of the matter, emphasized the reliance of *video* instructions as the main training tool, and thus unsatisfactory training, especially the lack of practical training, as the main reason of the failure. Pressed on the issue, themes like problems with US leadership styles, communication problems and cultural differences surfaced. As Sigurd once lamented: "You know, in their expressions these guys are always world champions. They know everything and do not ask for help."

The video mistake stuck and became the main explanatory idiom. Intrigued by this puzzle, and by the combination of the obvious oversimplification in the video explanation and the high level of indeterminacy and intangibility in their own efforts of other explanations, as described earlier triggered the first Hydro-Sintef collaborative projects and part of my PhD work to dig deeper into these issues.

Thus, in the present chapter I will explore what I call 'the social reality of construction', alluding both to Berger and Luckmann's "The social construction of reality" (1966) and Searle's "The construction of social reality (1995), in the world of project genesis. Moving from the argumentation in the previous chapter, centered around technology and managing as processes of emergence in terms of "challenging forth", of "ordering revealing" and poietic complex causative "industrial arts"; I will in the following argue that the more subtle dimensions of this reality that makes possible the bringing forth of such projects, on the more fundamental levels, is a reality of process, flow and "seamless" movement. It is a world struggling with the fixation of wholeness and compartmentalization, of concentrating conceptual flows, of "materializing abstracting", and of systematizing flows and flexibilities. It is a world of goals, objectives and aims that guide projection and conceptualization.

The greatness of the industrial arts of bringing forth projects rests upon these seamless movements, and flows, but its grandeur in the pragmatic sense is arguably due to what Paglia (1990: 5) has called the "delusional certitude", and Einstein labeled the "optical illusion" (Nadeau and Kafatos 1999) prevalent in the western insistence of the discrete identity of objects; including the conception of the self as limited in space and time, and the mastering of these objects through naming and knowing them.

These processes, which may adequately be labeled processes of "id-entification", the making of identity through conceptualization and externalization, in one sense through what anthropologist Tord Larsen labels processes and "acts of entification"; whereby "something inchoate congeals into a thing (Latin: *ens*), a unit, a category with discernible boundaries" (2008: 203). I will argue that the "social reality of construction" is largely constituted through processes of "concentration and projection" of (inter)subjective imagination. And as we will see in chapter ten, these processes are not at all "purely" mental, ideational and dis-embodied, but rather intimately connected to projections of passions and desire, and particularly related to male sexuality and communion. As Camille Paglia attests: "Man's metaphors of concentration and projection are echoes of both body and mind" (1990: 21).

In this chapter I will describe and analyze a subset of practices and conceptions related to project genesis in Hydro. First, the chapter focuses on the processes of "structuring projects", which I will interpret as processes of "concentrating conceptual flows". Secondly I describe enabling conditions of the social type referred to as "atmosphere", "ambience" or "ethos". These subtle conditions for project emergence are interpreted as contributing to the realization of projects in terms of its power to assemble, that is, to unconceal or reveal "the real" (i.e. the truth) of *intersubjective intentionality*. Thirdly the chapter describes specific practices related to the processes of training new employees. These processes are interpreted as activities constituting a form of imaginative "materiality of anticipation". Subsequently the analysis of core features of the genesis of industrial projects are summarized and elevated under the heading of "the art of entangling". Finally, some preliminary implications for a reorientation and renewal of anthropology are outlined. Before proceeding with presenting empirical material, I will provide more about the epistemological background necessary to interpret the perspective presented in the present chapter.

Entanglement and the seamless whole

Beginning in the early twentieth century quantum physics has been providing a fundamentally new understanding of physical reality. In a word, it says objects are not as separate as they seem, and at the most fundamental levels interconnected relationships extend and transcend space and time. This fact of nature is known as "nonlocality", a phenomenon that at least may be traced back to the pioneering argument by Einstein, Podolsky and Rosen (EPR) in 1935. It relates to observations of the interaction of certain physical events that do not share any causal connection known to science. These connections were called "spooky action at a distance" by Einstein, and "passion at a distance" by the polymath Abner Shimony. Schrödinger labeled the phenomenon "entanglement" (cf. Cohen, Horne and Stachel 1997). Several groundbreaking physical experiments testing Bell's theorem from 1964, itself often

described as the most profound discovery ever in science, have established that physical reality is indeed non-local. The most famous experiments were those conducted by physicist Alain Aspect and colleagues at the Institute d'Optique in Orsay, France (Aspect et al. 1981; Aspect et al.1982a; Aspect et al. 1982b). In a conclusive series of tests, done by Nicholas Gisin's group at the University of Geneva in 1998 and 2004, nonlocal entanglement of photons was demonstrated over respectively 11 km and 50 km optical fiber (Tittel et al. 1998; Marcikic et al. 2004).

Quantum theory and the experiments demonstrating the effects have revealed a profound new relationship between parts (quanta) and whole (universe) that have deep implications.[80] As Christian notes, quantum entanglement "… entails that the quantum mechanical 'whole' is profusely and quantitatively more than simply 'the sum of its parts'" (1999: 562). Because all quanta have interacted at some point in the history of the cosmos, like they do in the experiments reported above, the new physics has concluded that:

> "… nonlocality is a fundamental property of the entire universe. The daunting realization here is that the reality whose existence is inferred between the two points in the Aspect and Gisin experiments is the reality that underlies and informs all physical events in the universe. Yet all that we can say about this reality is that it manifests as an indivisible or undivided whole whose existence is "inferred" where there is an interaction with an observer, or with instruments of observation" (Nadeau & Kafatos 1999: 4).

A view of reality, indeed the whole universe, as fundamentally nonlocal, wholistic and unified has now matured into consensus knowledge in physics. However, people are mostly dealing directly with this reality through various manifestations or instantiations of this undivided reality, a reality that is "actualized", or "inferred", from a "potential" through making acts of observation or measurement. "Potentiality" might be considered a neo-Aristotelian notion, "… a novel metaphysical modality – situated between mere

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[80] It is worth mentioning that that which is measured in the above experiments is correlations between properties of quanta, light or photon, in a space-like region, and not the total reality that exists in this region. The total reality that exists here is inferred, not measured, by the presence of the correlations (Nadeau and Kafatos 1999).

logical possibility and *bona fide* actuality" (Christian 1999: 562). We must nevertheless conclude that, as Radin puts it: "Quantum theory and a vast number of experiments tell us that *something unaccounted for is connecting otherwise isolated objects*" (2006: 231).

The fundamentally new relationship between part (quanta) and indivisible whole (universe) provided by the new physics has dramatic consequences in many areas. For all of the sciences the "final" discarding of ontological dualism is put forth in the new physics. An absolute division between mind and matter, between man and nature, between the world and the self, is no longer a legitimate scientific position. "When nonlocality is factored into our understanding of the relationship between parts and wholes in physics and biology, then mind, or human consciousness, must be viewed as an emergent phenomenon in a seamlessly interconnected whole called the cosmos" (Nadeau & Kafatos 1999: 5). The new physics links the basics of nature to the whole of the human and social sphere and directly into the realm of metaphysics (cf. Aczel 2002).

In turn these insights, breaking fundamentally with the atomized and mechanical universe provided by classical physics, supply knowledge that fuels presuppositions and worldviews that instigate renewed epistemological and ontological debates. A key issue relates to the philosophy of science. The reality demonstrated in the experiments above cannot in principle be regarded as an "observed" phenomenon because the observer/measurement apparatus is an integral part of the outcome result. The total reality of the space-like region of the experimental situation cannot in principle be measured. Thus, limited scientific knowledge is inherent in the new physics. Experimental physical science, in the strictest sense, cannot say anything about the actual character of the undivided whole. A huge void is left to other sciences and disciplines. We must thus conclude that "quantum reality" provides the basis upon which a renewed dialogue between the social-humanistic and the engineering-naturalist sciences fruitfully may flourish.

"Physics envy" has not been missing in the social sciences earlier either, exemplified for example by Levi-Strauss' dictum about anthropology, that: "… it belongs to the human sciences… but… it surely does not despair of awakening among the natural sciences at the hour of the last judgment" (1966: 118). The seemingly most desperate, and arguably most disastrous effort, the case *par excellence*, of a "social science physics" emerged with the hegemony of neo-classical economic theory and policy (see chapter one and eight). This kind of integration of the sciences has been difficult, and in many respects strongly unattractive, at least since Nietzsche. For many social-humanist scientists to rely upon a worldview derived from classical physics, with its linear, causal, atomized and mechanical properties, as support for their analysis of human and social life, has left little to desire. However, as argued here, the ground provided by quantum physics is radically more attractive. It provides one key impetus for my own argument of a reinvention of anthropology in terms of a "radical naturalism" (see below).

Like pure mono-disciplinary, and thus in certain respects blinkered approaches to science seems unproductive in the light of the new physics, likewise is the "hope" to compartmentalize the quantum effects to apply only at the most "micro" of levels. As Radin notes: "Scientists are now finding that there are ways in which the effects of microscopic entanglements "scale up" into our macroscopic world" (2006: 2). For example, the field of parapsychology has conducted literally thousands of scientific studies documenting PSI phenomena.[81] Parapsychology, for those who might doubt, became a *bona fide* scientific discipline since 1969 when it was accepted as an affiliate of the American Association for the Advancement of Science (AAAS), the largest scientific organization in the world and the publisher of Science (ibid.).

Classical physics, and what we may label "classical epistemology" or "Newtonian-Einsteinian" epistemology (cf. Nadeau & Kafatos 1999), has been grounded in basic assumptions of reality based upon conceptions like "reality, locality,

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[81] PSI is a neutral term for "psychic phenomena", coined by British psychologist Robert Thouless in 1942 (Radin 2006: 6).

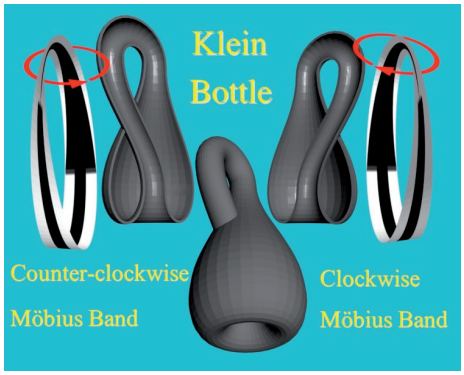
causality, continuity, and determinism" taking place within an absolute or relativized framework of space and time (Radin 2006: 210). The new physics revolve around concepts of *superposition* (the wave aspect of quantum objects), *complementarity*, *potentiality*, *uncertainty*, the *measurement problem*, and *entanglement*. Locality has been replaced by nonlocality, causality has been deeply problematized, continuity has been displaced by discontinuity and determinism has been fatally challenged. Reality does not at all work like a clockwork, and reductionism as a method of inquiry is consequentially flawed.

As noted above the new physics seems to put to rest on a scientific basis the ontological dualism that has pervaded all of the sciences since Descartes formulation. Classical physics has scientifically legitimated the radical separation between mind and world, constituting the basis of the realist camp in the two-culture wars; while various versions of social constructivism has underscored exactly the same duality from the human subjectivity, the idealist side. Simplified, the realist position assumes an objectively given physical reality with which our minds try its best to represent conceptually, while in the idealist position primacy is given to the processes of the subjective mind which with various mechanisms projects its conceptions upon the "outer" physical reality. The definitive blow to dualism coming from the new physics is relatively straightforward although deeply consequential:

> "If physical reality is on the most fundamental level a seamless whole, it follows that all manifestations of this reality, including neuronal processes in the human brain, can never be separate from this reality" (Nadeau & Kafatos 1999: 171).

The distaste many humanist-social scientists feel when interrogating knowledge claims of science is at least partly due to a lack of appreciating the fact that the mechanistic and "atomistic", that is, that knowledge of all the constituent parts is equal to knowledge of the whole, view of cosmos in classical physics has been displaced by a fundamentally different view in the new physics.

From the insights provided by the new physics it seems possible to untangle, as it were, a key confusion and source of hostility in epistemological debates. Based in the new insights we may now sustain that the various schools of social constructivism and postmodern philosophy has been correct in assuming that all knowledge, including scientific, exists in human subjective reality alone. However, the same perspectives have been wrong in deducing that this situation entails a separation between mind and nature, between mind and physical reality. The subjective reality in which knowledge resides is *indeed* in a privileged position to access and coordinate our experience with the whole of, including the formerly called "outer", physical reality. Subjectivity is not an obstacle or barrier on our way towards desired objective knowledge, because it is not a closed, self-referential system. It is rather through forms of subjectivity the inherent, "undivided" connection with objective knowledge is constituted. As noted by Johansen: "ultrasubjectivity = ultraobjectivity" (2002, 2004). As a metaphor for comprehending this new description of nature in existential or ontological terms, he asks us to consider the "Klein-bottle". It is a four dimensional version of the Möbius strip, immortalized by the drawing of M. C. Escher. In the image below a graphical outline of both is provided.[82]



Although the inherent impossibility of forging 3-dimensional representation of the Klein-bottle, the images illustrate some of the new interconnected relationships between part and whole, and between inside and outside. It provides a model to think about hyperdimensional feedback (Barth 2005). The implications of the new physics are overwhelming in terms of philosophical speculation, social theory and understanding of

[82] Image by Stewart Dickson, found at http://emsh.calarts.edu/~mathart/sw/klein/Klein.html (November 20, 2007.)

man and nature. The dualist worldview, underpinned both by classical physics and dominant social theory, has been turned upside down. As noted earlier, Johansen (2002, 2004), inspired by Bohm (cf. 1980, 2000), has suggested labeling the ontology that might be carved out on the premises provided by the new physics a "mono-plural" ontology. Primacy is here given to the seamless whole that seems to comprise physical reality on the fundamental level. Everything else is differentiated, abstracted/materialized instantiations and objectified manifestations of the undivided whole. This philosophical mind shift might be difficult to grasp at first, but long standing histories of thought that seems similar in their make-up is readily available in the eastern philosophical traditions. As a mental hook in the process of internalizing the consequences of the new physics, it might be fruitful to contemplate the proposition that "*everything is already connected*".

Another "partners in crime" hostility of the two-culture wars that seems to be solved with the new physics is, as indicated above, the "problem with metaphysics". Both the realist sciences and most versions of humanist-social sciences have developed and been driven forward, from Kant to Nietszche, from Heidegger to Foucault, to the post-modern constructivists and deconstructivists (i.e. Derrida and Deleuze), by a motivation to "purge" metaphysical speculation from the realm of rational discourse. Of course, since Kant the meaning of 'metaphysics' has become ambiguous, and come to mean a number of things.

As Gillian Rose's scholarly review shows, the various anti-metaphysical philosophical efforts of "deconstructing" and putting an end to the metaphysical tradition, do themselves recapitulate metaphysical categories. "The various claims… that metaphysics has been surpassed, have turned out to be rhetorical" (1984: 208). She tries to "… draw us back into the antinomy of culture, into the tradition which holds us" (ibid.). In critical philosophy, 'metaphysics' in its 'pre-critical' version means "the dogmatic thinking which illegitimately extends the pure concepts of reason beyond any possible experience"; while post-critically it means, "… the extension of knowledge

according to justified and deduced concepts which can be given in experience and principles which can be confirmed by experience" (ibid.: 93-94).

Illustrating both the difference in position, and the nevertheless common metaphysical ground in which they are based; Rose uses Comte's attack on metaphysics in the name of 'invariable natural laws' of positive philosophy, while Bergson attacks the 'invariable natural laws' *as* metaphysics. Seemingly advocating diametrically opposite conceptions of metaphysics, Comte illustrates the pre-critical notion, while Bergson exemplify the post-critical position. With the new physics; inserting indeterminacy, reflexive and relational subjectivity, and limited knowledge at the core of the scientific procedure and its possible epistemological horizon, as we have seen, the whole opposition, at the most basic of levels, between science and metaphysics seems to have obliterated. Thus new possibilities have emerged to transcend *both* the two-culture hostilities, and their parallel struggle to end the metaphysical tradition. In this sense, as liberal capitalism seems to have triumphed at the millennial moment, so too has metaphysics.

For anthropology, the obvious consequence is that the discipline's primary object of study, relations, as reflexively constituted, is established at the core of physical reality itself. Reflexive relationality seems to be the fundamental characteristic of the entire universe. Anthropology's occupation with the concept might now be based on a much more solid ground, while its possible contributions to provide empirical and conceptual content to the formalism of the new physics, which importantly itself disallows any ontological statements, is overwhelming.[83] In a quantum reality anthropology seems to be positioned at the absolute forefront; in a study of man and his entangled place in Kosmos, in his deeply interconnected, seamless and undivided, social, cultural and natural environment.

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[83] The disallowance is noted for example by Nadeau and Kafatos (1999). If this holds true also for some of the most recent contributions in the new physics, for example the "unversal rewrite system" theory developed by Peter Rowlands in "Zero to Infinity" (2007), is however questionable.

From establishing the epistemological background of the entangled and "undivided universe" (cf. Bohm and Hiley 1995), the seamless unitary whole, I will now proceed with the empirical case to investigate the "nature" of managing in and of projects in terms of the "social reality of construction". My argument revolves around the case that I have found the experiential reality in which the participants in project genesis is embedded, as well as the operational realities of their work at production plants, to be of such a nature that quantum reality is experienced as *pulsating just beneath the surface*, and thus indirectly is underpinning their daily work. The combination of the nature of these experiences, of working in an "experience near" modality of quantum reality, and tacitly or otherwise being informed by it, and the new epistemological backdrop briefly outlined above, leaves us to interpret the participants' practices, conceptualizations and the professional reality in which they experience in a new and hopefully fruitful way.

Keepers of gold and processes of "structuring"

It was in the very early phases of the Qataum project. We were working out of our temporary office space at the Hydro headquarters in Oslo. There had been some meetings, some interviews, we scanned and collected information from the internal web-pages, and so on and so forth. Alexander was recently appointed responsible for the "organizational" side of the slowly emerging Qatalum project. Alexander was in his early forties, and relative to his age very experienced in managing large industrial projects. He had successfully executed the role as Project Director of the largest project in Hydro in recent years. We had talked a lot about what makes for a good process in bringing forth a project, and he reflected based on his own experiences. He was extremely skeptical to the vast and complicated "systems" and "tools" approach to managing projects, the "Project Management Institute" (2004) standardized kind of approach, that in his words "administer more complicated tools the more complicated the project seems to be". For him the key seemed to be the opposite:

> "… the more complex project you are dealing with, the simpler, more straightforward approach you need. It all boils down to people and communication. You need to get a team together that works well, that understand each others positions, that talks plainly and directly".

Now, however, when discussing where *to start* in such a large and complex project as the Qatalum project, what to do first, as it were, he seemed to be saying something else. His position was nevertheless straightforward: "First now, we need to get some structures in place." Based on previous conversations with him, this statement seemed to me somewhat surprising. However, not before long I realized what kind of "structures" he was referring to, when he brought out his PDA. "To be able to start enrolling the best people for the project you need to get the calendar out and start booking meetings." Getting structures "in place" was in the first instance to schedule meetings, which in turn was a lever to start enrolling "good people". Now his strategy became more coherent with my ideas of his approach to projects. He had to work within the institutionalized environment of the company, were among managers "meetings" were the primary organizing principle of daily work.

Fascinated by this use of the term "structures", I wanted to get a handle of what kind of "structures" managers in Hydro constructed and employed in their activities of project creation. In the following I present some of the "structures" that I found most compelling. For brevity I have organized them in two main types of "structures": 1) Project *process* structures, and 2) Project *organizational* structures, although both are strictly related to the emerging projects in question. Of process structures I have found to main types, the first is the *meeting structures* referred to above and the other main one is the CVP (Capital Value Process), the decision support model that all projects now need to follow in Hydro.

Goldkeepers and the CVP

At first this "decision support system", the CVP, seemed to me very complicated and bureaucratically "heavy". Thus, I was in some bewilderment because Alexander still

had praised it as one of the reasons for the success in his last project. The CVP project itself, the project designed to establish the CVP throughout the organization, was launched late in 2001 instigated by the situation that their earlier decision support model never “became firmly planted within the organization”, as the manager of the CVP creation project put it. The group responsible looked at the systems other companies used, and found that the model Amoco had could fit. When Amoco merged with BP in 1998 the latter adopted the Amoco model. The name itself and the basic design of it, with drawings and schematical layout, was also an adoption from Amoco.

Then extensive work commenced throughout the organizations business units in clarifying purposes, defining contents and enable ownership of the CVP through participation of members. This was a long and complex process with which I will not dwell here. However, language was a problem because all business units wanted to get their “words” into it, while the CVP project team aimed at making the CVP universal within Hydro. The Hydro projects “native slide” in figure 10 displays the agreed upon concepts.

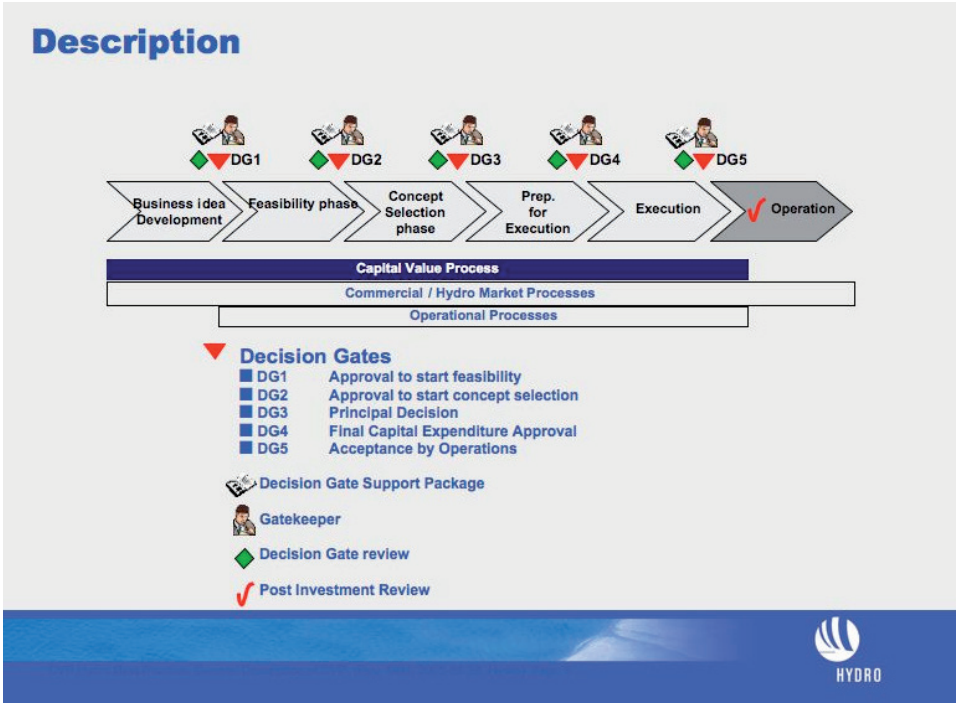


Figure 10. Slide from Hydro giving an overview of the basic principles of the CVP decision support process for projects.

According to the CVP leaflet or folder that was printed and distributed internally, *Decision Gates* "Is a milestone which a formal decision is made"; *Decision Gate Support Package* "Is a management summary of the key results of the work performed in each phase and including a clearly recommended statement"; *Decision Gate Reviews* is "A project external review to provide the degree of quality assurance required by the Gatekeeper"; and *Gatekeeper* "Is responsible and accountable for the decision made at the end of each phase. The appointed gatekeeper shall be proactive in defining Owners objectives and requirements, and ensure that adequate control is exercised." The *Owner* is the business unit, seen as the actor that orders and owns the project, while the Projects organization alongside operations are the organizational actors mostly executing and "delivering" the project. The *Post Investment Review* is "Evaluation of project after one

year of operation to provide the basis to assess the success of a major business decision".

Each business unit also defined their own "best practices", which enables the CVP. The best practices are unique to the business unit, and not universal in Hydro. For the Projects organizational unit the best practices that are listed on the CVP folders are the following: "CVP General Description; Start-up Arena; Risk Management; Project Definition Rating Index (PDRI); Decision Gate Support Package; Decision Gate Review; Post Investment Review; Hydro Estimating System; Hydro Economic Analysis; Commisioning." Already from January 2002 it was decided that oil and gas projects should use the CVP process and the same was established for Aluminium from 2004. By 2005 all projects in Hydro were supposed to be supported by the CVP. Projects not complying with the CVP could risk not being supported by the corporate management board. Some of the labels, like "Gatekeeper", was new to experienced Hydro managers, and was sometimes the subject of a laugh. For example Hans, director of one Aluminium business unit, once while we were walking together to a meeting said to a colleague and me: "The first time they said I was going to be gatekeeper, I did not have a clue what it entailed, and I thought it was "goldkeeper", so I was quite happy actually!"

Looking at the formal CVP process, the lists of best practices and other adjoining systems, I figured it seemed complicated and possibly and "overkill" in many projects. Not until speaking with the manager responsible for the CVP I could fully comprehend Alexander's enthusiasm for the CVP. "It is completely flexible and adaptable", the CVP responsible said. "You can use it for the construction of a huge factory and also for buying only a fork lift. Obviously, you scale it differently for these two tasks". In his mind it was completely scalable. Also, it turns out when talking to various project managers, directors and participants, that projects were indeed carried out in much the same way as "earlier", as before the CVP was implemented. A common statement is versions of; "The CVP formalized and explicated practices already existing earlier, but also added some new elements and concepts". As for Alexander, his main

reason for praising the CVP was that it "was a structured way of facilitating necessary dialogues with all stakeholders in the project"; and as such it enabled all parties to comprehend core dilemmas of project work. This in turn forged shared meanings among participants that they "were together and in the same boat, and could see their place in the bigger picture"; and that everybody had to, and wanted to, give and take to make the boat move forward, and succeed in its adventure.

If we consider the power that is literally invested in naming in our case, the CVP is particularly interesting. The name "Capital Value Process" was simply adopted from Amoco and British Petroleum. By this adoption the importance of the conception "capital value" has been firmly rooted in the midst of the engineering process of industrial creation in the company. The former "engineering department", "were we sat in felt slippers and white coats with our rubbers and pairs of compasses", as Gard humorously once put it, had by the adoption of the CVP name been transformed into the keepers and stewards of capital value.

Below is an illustration of how scheduling of main project events in the Qatalum project is done according to the CVP process.

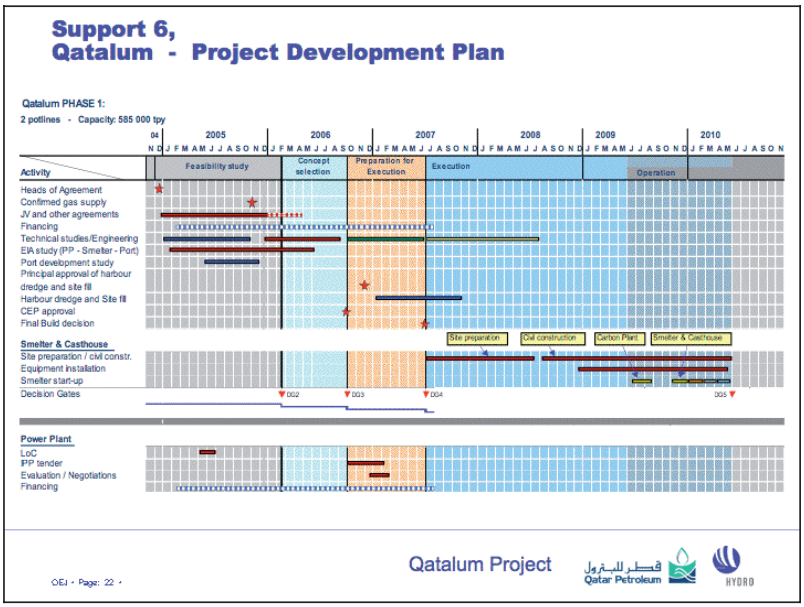
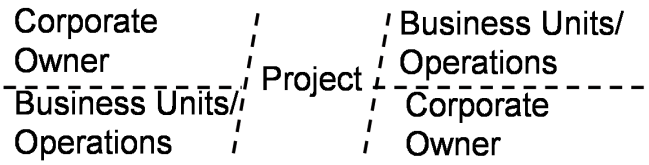


Figure 11. Overall overview of the project development plan, organized in terms of main activities and scheduled on a timeline. It was made in the early phases of the project and covered the entire project period, until "full production" of the finished plant is reached (Source: Hydro).

A brief gaze at another relevant case study, of the making of Fiat's Melfi factory, reveals some of the same dimensions of relevance as we have touched upon above, and also anticipate some of the things that will be discussed below. Patriotta's (2003) main finding was that the factory, that in retrospect appears to be a ready-made product, a black-box, is the visible outcome of a construction process also involving the future workforce. The processes of design an construction shows six main phases underlying the construction of the factory, and progressively leading to the sedimentation of a corpus of organizational knowledge: 1. the design concept; 2. recruitment; 3. formal training; 4. construction work; 5. learning to "disassemble" (technology) 6. full production.

Project organizing "structures"

All the projects I have been investigating have grappled with, played with, and variously throughout different phases brought fourth organizational "structures" that in turn have guided their work efforts. All of the projects have had different conceptualizations of their evolving "organizing structure". Here I will give a brief presentation, illustrated by their own figures, of some of these evolving and enabling structures. To ease the interpretation of these figures an overall model of project related interfaces could be useful. In the figure below main Hydro internal bodies involved in project creation are outlined. External stakeholders like suppliers and governments, are not included. The corporate owner is the body which finances and owns the project. The business unit operations side is the body responsible for running the plant when the project is finished. It is the operations side of the owner. The project itself, including the main institutional managing body of the project (i.e. the "Projects" division) includes of course all three of them. We see that in the earliest phases of a project it is the Owner role that is most pronounced, and thus placed on top of the dotted line interface. In the late phase of the project it is the Operational role that is of most significance and practical importance, as it is operations that are going to run the "end" result of the project, the materialized plant. Below follows the organizational structure like it had evolved more or less half way through the Azucueca project.



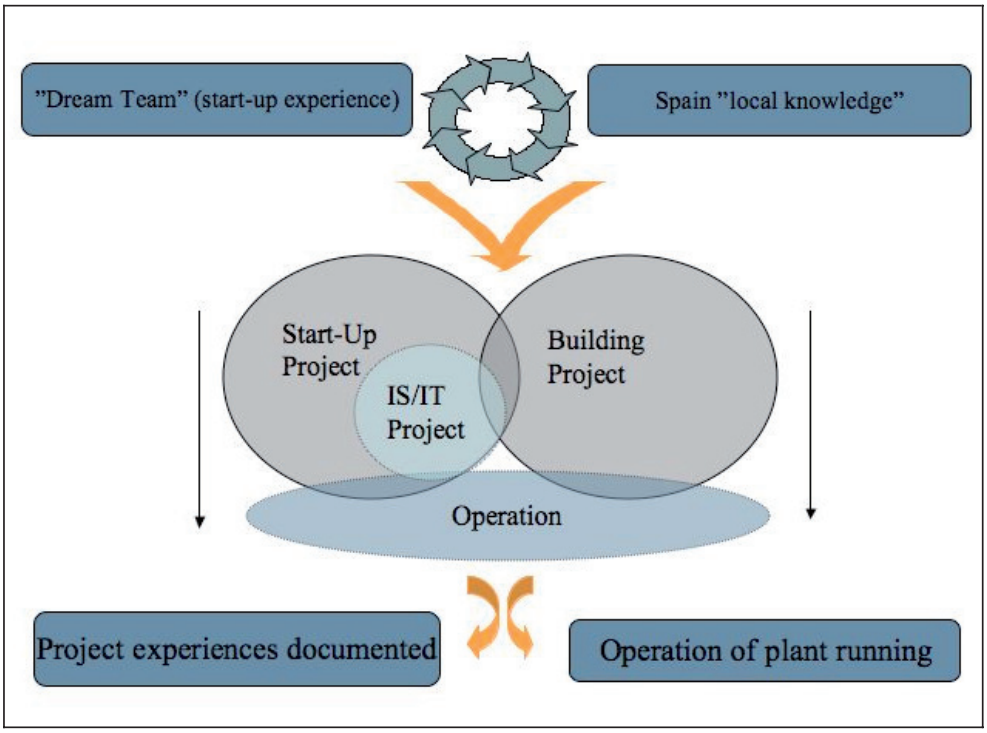


Figure 12. The overall organizing structure of the Azucueca project.

As the picture illustrates, the project was divided in three main sub-projects, the "start-up project", the "building project" and the "IS/IT project". The project was perceived as being fuelled by the experienced team of Hydro experts as well as the local knowledge possessed by those already working for Hydro in Spain and those that were successively hired into the local workforce. In this project the concept of the "Dream-team" was born. This team is those experienced Hydro people in the whole of the system that contributed to the project realization. Organization in time and space of the ream-team is a whole separate issue. A key preliminary point is that the three sub-projects of the Azucueca project at first were seen as quite distinct, and during the emergence of the project the interface management became more and more pronounced and the three were increasingly seen in conjunction. The "Building project", seen as the "hard physical stuff of buildings and technology" was managed by Hydro Projects (HTP at the

time), while the "Start-up project" was managed by a team of managers taken from various operational European Hydro businesses, and was concerned with "the soft side" and "everything else"; for instance hiring of employees, training, competence, making routines and procedures, legal formalities, customer relationships, and so on and so forth.

The next two slides are formalized outlines of the project organizational structures in the Xi'an project. It is significantly differentiated in terms of its formal "organization" versus its practical "organizing".

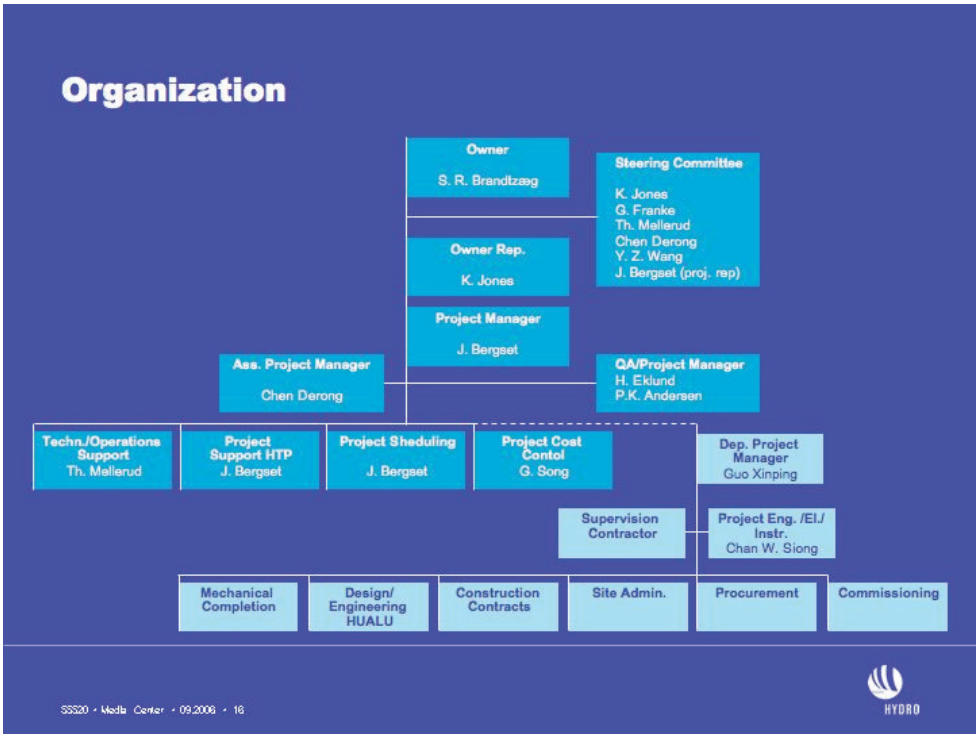


Figure 13. The "formal organization" of the Xi'an project. Notice the formally conventional hierarchical and "square-like" representation of the project organization given here (Source: J. Bergset, Hydro).

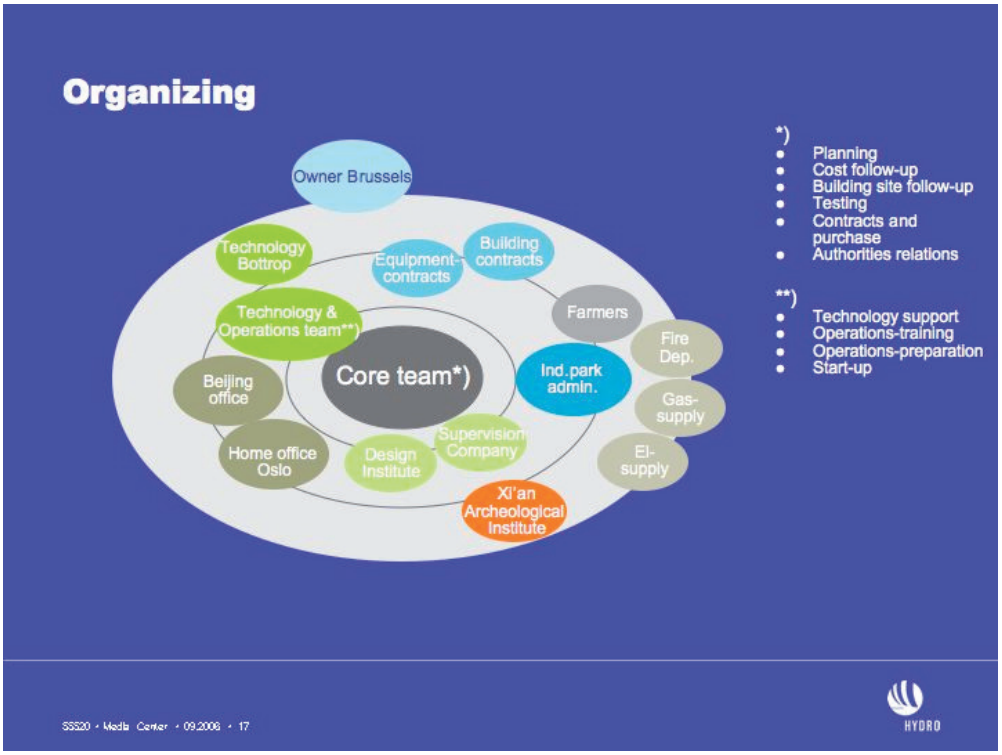


Figure 14. Project organizing *in the Xi'an project. Notice the much more fluid, dynamic and circular representation of the organizing in the project. It reflects more the practitioners view of entangled processes than the "formal structure" view above. (Source, J. Bergset, Hydro.)*

The first figure illustrates in the conventional, formal "organizational chart" way the many internal corporate bodies, roles, phases and activities of the project. The second slide includes also, in a more complex and dynamic way, the projects organizing structures with also Hydro external stakeholders included. The color-coding is significant and clusters actors according to main roles. Because it is in the magnesium business the "Owner" is referred to as the magnesium headquarters in Brussels; internal technology assistance is provided from Germany and Norway; corporate assistance is provided by the home office in Oslo and from the Beijing Rep. Office. The "Design Institute", supporting in detailing out the plant concept design and the "Supervision

company" are local in Xi'an; similarly for farmers, the "Industrial park administration" were the plant is to be located, and the "Xi'an Archeological institute" (see chapter five for more details about several of these actors). The equipment and building contracts are made in collaboration between the core team and the local assisting agencies.

For Hydro, this was a small project, but the complexity of the effort is illustrated quite appropriately. Moving to the gigantic Qatalum project, the complexities become even more evident. As the project leader in the early phase of the Qatalum project laconically commented, in a discussion about the dimensions of the project: "Just because it is big, it does not move by itself". The experienced technical advisor Gard once noted that small projects are more vulnerable to person dependencies, because here each person needs to take care of a broader area, while large projects have more redundancy (while accumulating more problems of complexity and coordination). Just to briefly illustrate some of the dimensions involved in such a project two slides from the emerging project organizing concepts are provided. Figure 15 outlines what the Qatalum project organization at one point in time, during the early phases, had evolved into.

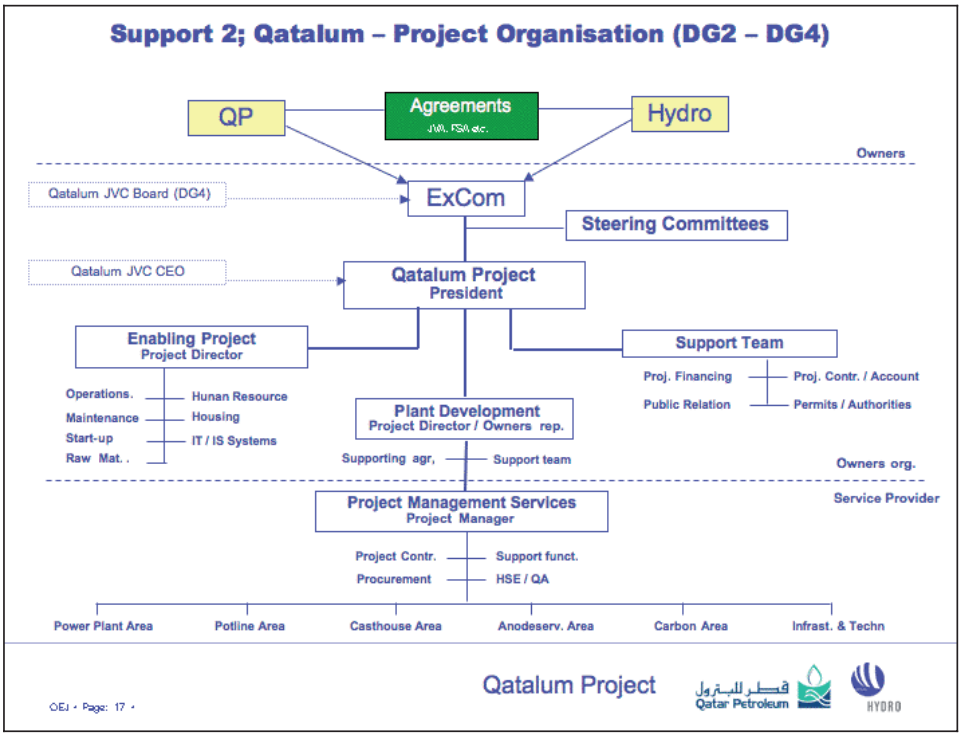


Figure 15. An evolving "concentrated" instantiation of conceptual flows related to the organization and organizing of the Qatalum project (Source: Hydro).

Figure 16 below was a very early draft trying to visualize some of the dependant relationships between the Hydro Aluminium Metal organization and key bodies of the Qatalum project. The functioning and evolving relationships across this interface is critical both to disseminate knowledge and experiences from the Hydro organization to the project, and to use the project as an opportunity to strengthen the competence of the Hydro Metal "parent" organization.

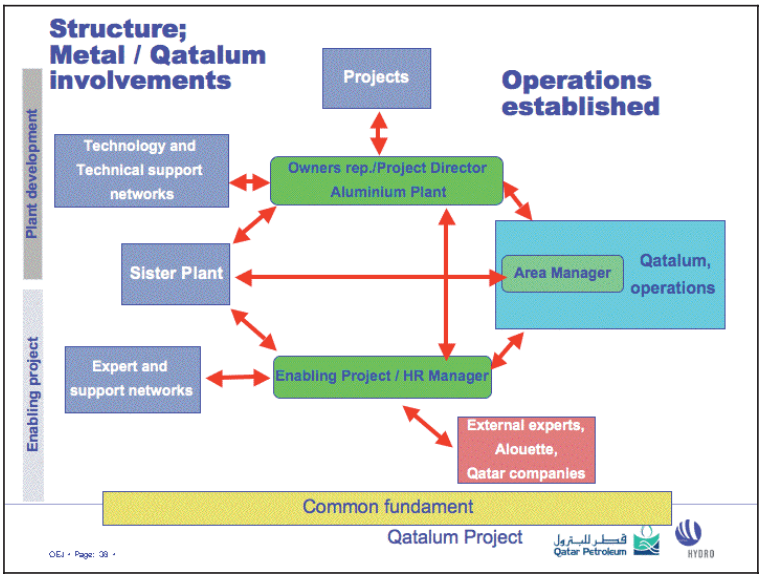


Figure 16. An early draft trying to conceptualize and visualize some of the relationships between the Hydro Aluminium Metal "parent" organizational entities and the Qatalum project(s) key actors and organizational bodies.

In various presentations and discussions, the importance of clarity and responsibilities of roles were a major issue. This was also highlighted by the fact that the project was a 50/50 joint venture between Hydro and Qatar Petroleum. Thus, the organization of roles and responsibilities had also to be broken down on what belonged to Hydro, what belonged to Qatar Petroleum and what were the "pure" activities and responsibilities of the Qatalum project and later the separate joint-venture Qatalum company. The bringing forth of these "organizing structures" and conceptual aids for action, were the result of a complex series of communicative interactions for longer periods of time. They were evolving and re-created until a point in time were they were considered mature enough to be "frozen", and then used as more formal guiding principles in establishing the huge project organization and work organizing principles, with support functions and legal statuses and all.

Concentrating conceptual flows

As demonstrated above, core managing practices in the early phases of projects are related to conceptualizing forms of organizing and "structuring" the work of the project. It is a simultaneous bringing forth of both a holistic overview of the project, of the core sub-elements in terms of actors, organizational bodies, roles and responsibilities, as well as their interconnected relationships. The visualizations of these complex dynamics are evolving, re-creating processes of intersubjective communicative interactions, where the models and figures are interconnected instruments and aids in a conceptualizing hermeneutic individual-collective sensemaking spiral. In these processes the project is merging out of a background flow of on the one hand pre-existing concepts, and on the other hand the creation of new concepts. In one sense the project is brought forth from nothing into existence. In a process of "concentrating and projecting", and as such possible instantiations of creational arts (cf. Paglia 1990), the project comes to life as both an abstracted and materialized creation. Latour writes that:

> "By definition, a technological project is a fiction, since at the outset is does not exist, and there is no way it can exist yet because it is in the project phase. This tautology frees the analysis of technologies from the burden that weighs on analysis of the sciences... after all the controversies, the sciences seem to have discovered a world that came into being without men and without sciences" (1996: 23).

Here Latour seems to be saying that "a fiction" does not exist, and that it exists only insofar it is materialized in physical technology. As such, technological projects are ripe with both epistemological and ontological concerns. How is something brought forward into existence? Why is there something, rather than nothing? He seems to suggest that such projects are constituted as a movement from non-existence to existence in terms of physical realizations. Latour continues in a couple of paragraphs worth citing at some length:

> "[For the observer of machines] the big problems of realism and relativism do not bother him. He is free to study engineers who are creating fictions [the projection of a state of technology in the future to a time T]… [Engineers] They're novelists. With just one difference: their project –

> which is at first indistinguishable from a novel – will gradually veer in one direction or another. Either it will remain a project in the file drawers... or else it will be transformed into an object… In the beginning, there is no distinction between projects and objects. The two circulate from office to office in the form of paper, plans, departmental memos, speeches, scale models, and occasional synopses. Here we are in the realm of signs, language, texts. In the end, people, after they leave their offices, are the ones who circulate inside the object. A Copernican revolution. A gulf opens up between the world of signs and the world of things... The observer of technologies has to be very careful not to differentiate too hastily between signs and things, between projects and objects, between fiction and reality, between a novel about feelings and what is inscribed in the nature of things. In fact, the engineers the observer is studying pass *progressively* from one of these sets to another. The R-312 was a text; now it's a thing… The capacity of a text to weigh itself down with reality, is what endows fictional technologies with a beauty that the novel we've inherited from the nineteenth century has difficulty manifesting nowadays. Only a fiction that gains or loses reality can do justice to the engineers, those great despised figures of culture and history" (Latour 1996: 24).

Latour seems here to be saying that existence and reality is "endowed" by physical materialization. The empirical material presented above enables us to question this proposition as being somewhat ontologically confused. First, our material suggests that both ideas, concepts and expressed signs in a variety of media (drawings, slides, pictures, texts etc.), certainly are "materially real". Indeed, it suggests that abstracting (often considered an upward movement from some kind of material base) is an interconnected process with "materialization" (considered as the downward movement from abstract to concrete).

The "concentrating" of conceptions of organization and organizing structures above, suggest a simultaneous movement of *abstracting materializations*, were signs *as* objects are brought fourth from a background, first of still inchoate qualities and relations, then to ideas and concepts, which are recreated, transformed and concentrated. More credence then is given to what Picasso supposedly once said; "everything you can imagine is real". In turn, this might as well be what Latour is also proposing.

In the efforts of concentrating (abstracting/materializing) flows in projects we catch a glimpse of a deeper nature of this reality. Reflecting on the bodily and psychological nature, or basis, of cultural production, Paglia notes: "Male concentration and projection are self-enhancing, leading to supreme achievements of Appollonian conceptualization" (1990: 22). Fuelling the genesis of project conceptualizations are processes of concentration and projection, successively unfolded through time. But projects are not only materialized ideational projections, or brainchild's, but likewise "bodychild's"; and the relationships of processes of concentration and projection to the male body and sexuality is discussed in chapter ten.

To properly theorize these ontological relationships there seems, however, to be a lack of a coherent and *differentiated* ontology, to account for phenomena's relative positioning and reality status in the overall ontological field. In Bohm's philosophy and terminology, recently gaining currency also in mainstream anthropological forums,[84] we might say that whole-part project conceptions are abstracted and materialized in successive movements of unfolding, from the generative or "implicate order" to the "explicate order" (cf. Bohm 1980, 2000). In this light we might literally propose that the "finished" result of projects, the physically operating plant, is a "fantastic reification of abstractions"; signifying something quite other than what Radcliffe-Brown meant when using the phrase in his critique of the concept of culture (1940: 10; see chapter two for a discussion).

As discussed in chapter five, I outlined elements of such ontology. Below, this ontology will also be grounded in the new physics of quantum reality; the sciences of nature and the universe as fundamentally entangled, relational, "seamless and undivided". To arrive at such a grounding, and finally the proposition of an anthropological turn to "radical naturalism" in the final chapter of the thesis, I will first return to a set of empirical descriptions revealing some of these dimensions in managing practices.

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[84] cf. Timothy Ingold, "Anthropology is *not* Ethnography". Radcliffe-Brown Lecture in Social Anthropology, The British Academy, London, March 14, 2007.

The ambience of enabling

As we have seen, the projects investigated here have invented different solutions to the organizing concepts and actions, and in bridging the "hard" and "soft" side of projects. In Azuqueca they started out with two separate projects, the "building project" and the "start-up project", and gradually made the interfaces and overlaps stronger. In Xi'an there was one project that was broken down in several activities. In Qatalum, the complexities were visualized above. In this section I will describe how both the hard and soft side of projects are seen by the participants as being underpinned and fundamentally enabled by "soft" processes of human, social communicative interaction. As noted by a President in aluminium when we met during the inaguration of the Suzhou plant: "The hard aspects of projects we know how to handle. There we are really good. To a large extent it is extreme logistics, and here we have brilliant people. The main challenges are on the soft side of projects." Likwise it was often noticed by managers and other experts involved one way or another in project work that the project methodologies or routines and procedures were mostly tuned to the "hard stuff", while the soft side was handled on a more ad hoc, person-dependant and improvised manner. As described in the Decision Gate four meeting,

As the first empirical illustration below I represent the third chapter of the hypermedia learning history "To plant a remelt plant". It was made as a jointly-told tale to document experiences from the Azucueca project in a narrative and engaging form. This chapter was called "The Flight of the Flamingos – atmosphere of enabling", and the theme and focus was briefly outlined in a short "curtain raiser" before the two-column jointly-told tale unfolded, and also in a short "closing" afterwards. The right column present direct quotes from the project managers and participants themselves (only names are changed), while the left column present questions, commentaries and contextualization provided by the "learning historians" (i.e. the two researchers) (see chapter four for more about the learning histories in particular and narrative knowledge in general both as investigative method and as representational form). The chapter is represented in the way it was completed in the Sintef research project, the only thing

that has been changed is the names of the participants and the removal of links to various video interviews with the participants. I have chosen to represent it in the original format also to illustrate the learning histories methodology, and the para-ethnographic and "narrative anthropology" utilized in one of the Sintef research projects (as well as in my PhD work) as described and reflected upon in chapter three and four. It must be emphasized that the learning histories methodology was used in relation with Hydro in only one of the Sintef research projects, the Azuqueca project. Furthermore, it has not been used in my PhD research work, although a narrative approach has been utilized also here, in addition to other ethnographic, statistical and historical methods.

The Flight of the Flamingos

- Atmosphere of Enabling

You can see the flamingos take of from a perfectly quiet pond. On television, I guess. First you see the growing "uneasiness", wings, feathers, waving. Noise. Fuss. It takes time. But slowly, you see things get more concerted. The flock lifts itself slowly from the lake; it looks more coordinated, almost like they are helping each other out, pulling each other by their feathers. In Azuqueca you have heard about the birth of the plant. The initial ideas and preconditions that guided the project in the first place. In this chapter we will look more in detail on the subtle and critical *enabling conditions,* and the *sustaining* of a robust project environment as the project precedes, for example through weekly meetings across the start-up-project and building-project interface. We look at the necessary atmosphere and actions for pulling a complex project like AAZ out of the "pond of project potentiality" and into realization in the ever expanding HAMP network [Hydro Aluminium Metal Products].

Central themes that are touched upon in this chapter are the differences in attitude between a holistic and a "monistic" view. To take responsibilities for the whole of the process in your little piece and in your daily work, versus focusing solely on your task and let the others do theirs. As in the discussions on the IS/IT issue, you will see this difference clearly. Critical factors have to do with care, interest in others work and problems, good relationships across interfaces, frank speaking, complementary competences and a "culture of cooperation".

Establishing a new plant Hans: We need people who have of course good relationship

is a complex task where people with different backgrounds, experience and competencies are needed to succeed.

with customers, and have the right knowledge about the product that we are making. But also people who are able to take a leader-role, and also, to focus on educating the people, to have focus on health, environment and safety, which of course is extremely important in such operations like the one we have in Azuqueca. And also that they have the ability to see the relationships between this plant in Spain and the rest of the re-melt system, and the production system we have in Europe. So it is a pretty complex job were you have to focus on margins and at the same time also have to do a job as a leader for the people who are working in the production.

To have some basic structures and people in place is essential for structuring the work. To have a common point of departure and a shared understanding of who is responsible.

Paco: I think once the steering committee for the operational issues was fixed, a lot of things were clarified. After having the plant manager in place together with the support team and other Hydro people in the daily operations, things became much more clear, and solved easily.

Important part of the initial phase is to establish arenas for doing the work and the division of labor between them.

Susan: The main challenge has been to find the right way of how we should work together. First to get the group together, and then make it work together. But also to see how we should structure it, what kind of issues we have to take care of in the steering committee meetings and in the workshops. I think that in the beginning we were mixing those two together. And now we have learned that we have to have a clear idea of what we do, and how to get things in progress.

The aim of the project is not only to get the work done but also to make sure that the new organisation will manage on their own after project termination.

Hugo: Our priority is to delegate. We have to get the Spanish organisation to work well, and that is not by doing the things by ourselves. It is rather by bringing knowledge from Hydro into the Spanish organisation, and do it from the operational and start-up side. They should do the work. So it is really important that they know what our tasks here are about. Here they are 20-30 persons and they have engaged a firm of more than 100 persons. We are only 2 persons. They should not believe that we are here to actually do the job, we are just facilitators.

Ida is hired from another company for this specific

Ida: The daily following-up has been the task of Juan and me. Bruno and Susan started in February to do all the

project, especially to support Juan.

planning, so then Juan and me started here in Madrid, we were two persons sitting here following the project daily, and then we grew. We were six persons, now we are thirty persons so it is expanding the number of persons taking actions and responsibilities. Now I know a lot more about the complexities of a start-up! I do not feel more nervous now, that we are loosing the control or things like that, but it is just that I realise more and more that there is a lot of details that have to be taken care of.

The overall project is divided into a building project, a start-up project and a IS/IT project.

The interfaces and responsibilities between the different projects need to be defined in order to create a climate and culture for co-operation.

Ida is the bridge towards the building project.

Susan: There are weekly meetings between the start-up project, and the main project, and this is between Hugo and whoever from his project organisation that is taking part, and then Ida and Juan form the start-up side. They have made a MPP-file of all the issues that they are discussing where you can also see the progress. There have been a lot of discussions about the commissioning, and the responsibilities there. This has been settled between the two projects, and then there is next week (in June) a big meeting in Madrid between the main project, start-up project, and the IS/IT. And they are also discussing then how they approach the vendors of the equipment. So this interface is taken care of, and they are going to make a quite detailed overview of all the different interfaces, and who is responsible, and documenting this. There is this link between the two projects through Ida. And it seems to be working very well, they have a good communication.

On a daily basis this is seen as keeping an eye on the whole while doing the small parts.

Ida: We are having a walk around in the plant every day, and if we see something we ask the people why. But still we are not the owner of the project. So it is not our job to follow up the building project, we are following up the training, and we have to concentrate on that, that the organisation is in place. That is our major task. But of course, if we see something out there that will make difficulties later on in the production, we are pointing at that.

But this is only possible with mutually respect and trust between the persons and parties involved.

Ida: Juan is a very clever person, he has taken a lot of responsibility, and he has made my job quite interesting, and funny, and I think that it has given a very good co-operation. That was for me one of the critical points, the co-operation between Juan and me. If that hadn't turned out to be good, that would have been a disaster for the start-up here. So that

has functioned very well. Due to that I think, I am quite relaxed, because I know Juan is a person that will take responsibility, and also the people he has hired are people who will do a good start-up, take responsibilities. So I am relaxed about that.

To get the best out of people and networks.

Juan: From my point of view the relation with Ida is perfect. She is a great girl, and I think she has a lot of knowledge of casthouses and what is maybe more important is that she has a lot of knowledge about people. Who to ask, so when she doesn't know something, she just can phone somebody here and somebody there to get an answer.

A good working atmosphere in a turbulent environment.

This reflects on the issues taken up in the chapter "Timing of training".

Ida: But everything is starting and it is getting faster and faster, and we can't just start to think, "oh, we are loosing the control, or we don't have the overview". We just have to believe that we are doing an honest job, that we are on the right track, and still try to contact the right people, and do quality checks, and in a way we can't stop now. I don't know what kind of feeling I have, it is just that this has to run now until the plant is starting going. And all the people that are engaged or hired in the organisation, they have to have tasks. And we have to prepare the training, and we can't have 30 people hanging around here without having anything to do. So there are a lot of tasks that we have to solve daily, and it is good that it is in progress.

People are different, and maybe more important than focusing on that, is it to make sure that the mix of people is right and on how to make them work together.

Susan: There are some cultures where people say more directly what they think and feel, and some are more reserved and thinking more and all that. And I guess that is not bad. Some people sometimes provoke a little bit, because it creates discussions. I think it is also important, that somebody tries to control our structures a little bit. Because when you have different people with different opinions and background and all that, it is very easy to just go on and discuss and discuss and discuss without doing any decisions or without getting further. Somebody have to notice that we have to stop with this, because we cannot get further. Maybe then we need to get somebody else in the process, or go somewhere to learn more or do something to get around it.

In an international company the language

Bruno: Then to make this recruitment process, of course we have best recruitment from the dream team on Clervaux for

will always be an issue when selecting people.

the operations. Why Clervaux? I guess that Clervaux we have a very multicultural environment with people coming from Portugal, Italy, France, Germany, Belgium, Holland, so plus in the past with Hydro a lot of Norwegians. So we have been used to be in this context where today you have to discuss with a Norwegian, tomorrow with a UK guy or with a Dutch or... And of course with this Portuguese people speaking Portuguese, mainly English, and for some of them some Spanish. We have one Italian shift-leader speaking every languages, German, Spanish, French etc. So that was for us a good opportunity.

To see the opportunities in differences and different languages.

To know how and when others should be involved in your work.

Hugo: Of course it has to do with experience, but at the same time it is necessary to have someone to discuss with, to initiate a process. To get others opinion. You should not believe that you could sit for yourself and make the right decisions every time. It is enough to have someone you know what are good at and to discuss with them. It is also OK for your own security to get others opinion on our own opinions and what you think is right. Of course, something you just know, and then you do that.

Juan: The communication is fairly good, it is excellent actually. I was surprised. In the beginning I was surprised, because when I started I sent some mails: “Oh. I am new, and I really don’t know if you are the right person, but I am just asking THIS”, and you really get good feedback, and “Ok, this is the answer, this is the contact person”, that made me feel really good. You are somebody that is working alone, the feeling that I was alone, working in Spain for a few months. So: “Oh, somebody knows that there is a project, but who is that”, and you see some guys from Norway, and some of the guys are saying. So this is a project, “Don’t worry, we know that you…”, that makes me feel really good.

To signal support is to enable. An invitation to use the network expertise.

Ida: From the Norwegian side there is a person who is responsible for all the casthouses, and he said to Juan and Paco quite early that we should not hesitate to ask about support if we need that. And I think that is a very nice comment to give.

There will always be some uncertainty. The

Hugo: One could always be surer that one will succeed. There is no limit of to what degree one could be sure to

IS/IT part seems in this respect to be a bit special.

succeed… Of course in a start-up and implementation phase there will be things that you have to do something with and improve. It will always be a learning curve in a start-up regarding a lot of issues. One will be the technical equipment, another is knowledge of the operational and maintenance people. And you always have this IS/IT part, which is not always so easy to communicate with, because it is another discipline with a different language.

Susan: IS/IT-people are always a bit difficult, or we are difficult for them, I don't know. But it is always the same, whatever project it is ☺. No, but that was a joke!

Special in the sense that the IT/IS-part has their tasks more or less separated from the other activities in the project. As a consequence their work easily turn into some kind of black box where only the input and expected output is known. This can lead to some misunderstandings and frustrations.

Bruno: Of course we are always disturbed by the IT/IS-people. I can be very aggressive with this people because they have no structure, they have nothing to propose outside "we are the best, we can make a good system". Everything is only on paper. We have never seen a good system from the IT/IS-people. It is the same for Microsoft or Lotus: If you buy that at home, it will never function correctly the first time. You need some support. This time I guess it will be expensive. And they are not convincing me that everything is necessary. And of course, IT/IS-people are important, because without them we will need more - perhaps much more manual control. Or the risk with the input: If you put something manually in the computer, and you transfer it to someone, you can make a lot of mistakes. I guess they are very, very important, but I have my difficulty to see how professional they are, and I have not the impression, so... I am perhaps very aggressive, but it is better to give the right signal to someone. But we have had only three meetings with them (until May 2001).

Why the frustrations?

Bruno: They are aware that we need them, we need some IT/IS, so they are the kings. Try to engage someone from IT – I have tried three or four years ago from my plant – and now two years ago. You will never find someone, and if you find someone you will never be able to check with the competence's yourself. And then you will have to pay a lot. So it is a good business.

Mess for money?

Bruno: I have tried to ask IT/IS-people: "What will be the

profit of installing this system, what will be the money needed, what will be the training, what will be the maintenance?" So it is a simple thing: You need to evaluate your cost before you sign something. You will receive a big mess package and no clear answer.

This black-box can be hard to understand because IT/IS is specialised discipline with its own language.

Hugo: I always wonder about all the abbreviations: What is behind these words that is just abbreviations? What do they mean? I have often problem getting this written out in clear understandable text. IT/IS people understand it and put them together, but it is a world outside that, who also should have an understanding of what it is about. So specialised things have become it has turned into a communication problem and one should stop using all these abbreviations and use text and natural words instead. That would make the communication easier until you get more used to it so that everybody understands what it mean.

As an example, the MACH and APICS IT systems history.

Susan: I think IS/IT will always be an issue, that there is always something to say. That is my conclusion. Probably IS/IT people think we are difficult and vice versa. But of course there have been some problems with the IS/IT. You have probably heard that we were supposed to get APICS, and then we didn't have a very good feeling about the development work, and the projects as such. So we asked them in the summer whether that they could really deliver what they had promised. Because also already during earlier months they had reduced functionality, and said this will come later in a later version. And then they were checking, and they came back with the knowledge that they are not able to deliver us the APICS that was planned, and that we had to go back and use the MACH system that was implemented in Henderson. And that was not so nice, so we had a lot of discussions back and forth. Is this really the right one, should we go back and take the old system where we know there were a lot of defects? Shouldn't we concentrate the development work on the new system, and take it as it is. But they said that, no we should go back to MACH 2. So in a way I felt, many of us felt, that we were not given options. And that is not so nice always, when we are customers we should be able to affect things. But then there were some workshops, and there were new reports and functionalities defined for the system. And development work started

immediately, and it has been going on well since then. So at least the report is that everything is in place. We don't have all the functionality's that were planned originally, but we have a system which is supposed to function OK, the mistakes from the system of Henderson has been taken care of.

But still – the problem is seldom reducible to one or more specific IS/IT individuals.

Alberto: I have a really nice relationship with Susan. She always says that she needs to know more about IS/IT. It has been my job in these months to establish a link between HAMP IS/IT and Susan.

Integrating also the IS/IT parts in the planning.

Susan: We have the IS/IT steering-committee meetings at the same time as we have the normal steering committee-meetings, we have about the same people taking part, so we said that OK it is no use to keep them separately. And we have agreed in some ways, how they should report. They have to make status reports about the actions and cost, if there are delays or any change, they have to make deviation reports immediately.

Salvador is one of the new shift-leaders and both he…

Salvador: The group is very connected, all the people I think is very good, no problem with them. The managers are very nice, we can speak with them about problems, very satisfying.

…and the plant manager are optimistic.

Paco: I think the situation is really clear, we know perfectly what to do. In this sense we don't feel uncertain about any issues. More or less everything is clear for everyone. I have seen that the communication between the project and the operational people has been very positive. So I am not really surprised about how the development in the project has been.

As we have seen, one of the main challenges is the process of figuring out the right ways of working together. That has to do with process of flocking, first with Hans and his team, then with Susan, Bruno and Paco onboard, and further with Hugo, and Juan and Ida, (the dream team), the shift-leaders and operators. Responsibilities more and more distributed in the group. Larger and larger complexities of coordination. All the way assisted (in different ways) by the (extended) dream-team. Focus on getting the Spanish organization to work. The dream-team lesser and lesser doing the job themselves. Both about finding the track, get the project on track, concerted like the flamingos. Thus, high attention and actions on getting the atmosphere and work climate

to function across the interfaces (local/global), and between the start-up project, building project and IS/IT project. The last one always a challenge – not the least concerning language and communication. Focus on building trust.

It touches the issue of taking responsibilities for the whole of the process also in your own specific little part and daily work practice. An example is when Juan or Ida report small things from the building project, if they see anything, even if it is not their responsibility. Such attitudes and actions foster a culture of cooperation, and tackle the main challenge in complex projects. The problems and things that are occurring in the interfaces, places where no particular person feel it is their responsibility.

Likewise, the challenge of coordinating parallel activities asks for a great focus on interfaces. Like the flamingos, at first it is only a few in the air, and the challenge is to get the rest of the collective distributed but concerted together on the air, without centralized top-down ”command-regimes”. The challenge is also, however not to make things too complicated, to plan yourself ”to death”. To this issue and paradox we turn to in the chapter called ”the paradox of planning.”

Trajectories of training

As a second assembly of ethnographic material I will describe the first training session that occurred with the new operators that was hired for the Azuqueca plant. The description is saturated with additional quotes and commentaries from the project work, relevant to the issue of “training”.

We are located in a somewhat unassuming office building in the center of Azuqueca. It is summer, hot outside. Inside as well, but the fan does its best to keep the temperature at an adequate level. At the plant site the construction of the buildings and technical assembly is reaching its final stages. In the room Sigurd is towering over the group of new operators who are to become the labor force of the emerging remelt plant. In fact it is their first day at work. My colleague and myself accompanied Sigurd as he traveled from the major production, research and support facility at Sunndalsøra in Norway, to give a two days introductory course to start familiarizing the new employees in Spain with Hydro, aluminium metal, safety, processes and operations. Sigurd is an impressive character. Tall, energetic and vigorous despite approaching retirement. Silvery grey hair brushed backwards. A lock of hair drumming his forehead when he is

nodding his head to underscore critical issues. He walks around in the room, gesticulating, emphasizing, illustrating with video-clips, drawing at the whiteboard, showing pictures and models on the slideshow projector. “The basic characteristics of aluminium are the following”, says Sigurd. “The reason for its popularity, so to speak. It’s of course very strong compared to its weight”. On the slide he points to the bullet that says “high strength to weight ratio”. He illustrates by some examples, using aluminium to reduce the weight of cars by half. “The second thing”, touching the slide picture at the proper bullet point, “is its recyleability. When you are scrapping your car, we are using all the alloys again, in Azuqueca for example. So that’s one of the biggest advantages of aluminium metal.”

He proceeds with other key characteristics making the metal popular, its corrosion resistance, that it is easy to form and that it is a good heat and energy conductor. The language is a problem. Not so much for Sigurd himself, although for his mission, possibly. His Spanish is rusty, at best, however his pronounced Norwegian tone of voice when talking English is the way it should be. The members of the group speak varying degrees of English. Some of them hardly anything. Nevertheless there are questions now and then. Curiosity radiates in an atmosphere of low-key excitement. The Spanish production manager, maintenance manager, and several other supervisors who speaks fluent English, people that had been hired earlier, takes turns in translating. Sigurd has turned his attention to characteristics of the metal that is vital to know in order to produce it.

> “It has low emissivity, which means you cannot see on the metal its temperature. Steel tends to glow when it is hot. Also, it has low viscosity, which means that it flows easily. It has the same viscosity as water.” Questions, clarifications, translations occur at every major point. “The third issue is that metal shrinks during solidification, which means that it takes less volume in solid state than in liquid state, and it has a rather high melt capacity, which means that when it solidifies it releases a lot of heat.”

Sigurd is now approaching his most fundamental subject at the whole introductory training course. “These last two characteristics is very important when it comes to

safety. Liquid aluminium is one of the worst metals on which you can burn yourself on, so to speak. If you spill aluminium on your skin, it sticks to the skin due to the shrinkage." His body language illustrates all the elements in the sentence. He simulates spilling metal onto his skin, and in the next instant he is himself embodying the metal as it shrinks and sticks to the skin. "This is why you need protective clothing, for the danger is that while it sticks to the skin it also releases a lot of heat, which means that the burn wounds will be very deep. And of course the fifth element, the metal is chemically very reactive." He is projecting a videoclip of alloys going into a furnace. Stops the clip and points. "If these alloys contains any moisture, water…", he's got no time to wait for translation, and switches to Spanish; "agua, and if it goes under the surface, you will have a steam explosion! The metal is blowing out of the furnace. Last year one person, standing beside the furnace door, was killed in this way." The participants are mumbling, discussing the issue. Sigurd explains the mechanism in more detail, drawing on the whiteboard. "If water is trapped beneath liquid metal in the furnace it will turn to steam in parts of a second. If we have one liter of water it transforms to 1700 times its volume, which means; you blow everything away." His hands again illustrating the theme; now they embody the big explosion.

Other materials are also detrimental to the recycling process and the safety of people.

> "In the US there is a huge problem with the scrap dealers. Typically boys participate in collecting scrap, for example drinking cans. They get paid per kilo so you can imagine the temptation to increase the weight. What they do is to pull of the led that are used to stabilize the wheels on cars and put into the cans, so the weight is increased many times. However, it ruins your metal!"

He is an embodiment of the knowledge based aluminium industrial business in Hydro. He knows his subject through and through. An authority based on knowledgeable confidence, radiating trust and authenticity. He has held many positions in Hydro; in research, in production, in projects, and not the least, he has traveled around the globe, many times over, in Hydro's casting network to audit and help plants out of the

problems with which they are striving. And there are many problems and strange connections of various socio-technical types. If there ever was one who knew most of them, it is Sigurd. Due to all the traveling he never finishes the renovation of his boat. The free time he's got at his disposal at home seems to be spent in the boat. "Now it is the bloody roof that is the problem", he exclaimed a Friday he had taken the day off, as I reached him one time on his mobile phone. Sigurd always seemed to speak his mind, straight from the heart. No holding back.

Later the same week in Azuqueca we were speaking with Bruno, the lively traveling engineering-manager type of cosmopolitan, unorthodox and surprising personality, no place he really considered home; and the circumstance was now in the almost ready office section of the emerging plant. He was commenting on the issues about safety, training and pedagogical communication and illustrations. Bruno said, in his usual combined entertaining and serious way of talking:

> "When the training is planned", he made a pause for effect, "it is important not to make it boring. You know you can take the people and put them in the front of a screen, or in front of the video-projector or at the front of me. And I can explain them during thirty days about aluminium, about the market, about the customer, about the equipment, about everything. But in the end the people will be impressed by me, and will say: "ah Bruno, very good!" And if I have said the truth or not that will be the same, OK? And then I can say, OK, you are ready to go and burn yourself to death there, because it is dangerous! – I'm being aggressive again…"

He was often joking about his own personality of being to straightforward, direct and "aggressive". "But we have to balance that, and I guess that the best way is to bring people to where you have the similar operation. And to pay for this training, and to pay what it costs to have people to stay for one week or two weeks or three weeks or four weeks or five weeks". Sigurd joined the discussion and added: "The money used for proper training is like "a piss in the sea" compared to the cost of sending support people for a long time after start-up, like we have done in Henderson." Susan, the project manager (of the "start-up project"), a much more diplomatic and much more systematic

person than both Bruno and Sigurd, she also emphasized the importance of practical, hands-on training:

> ”I don’t think Henderson had a ”dreamteam” in the way that we have had. They had training, lots of training actually. Too much maybe. And a lot of training was done in the classroom, but not so much in practice. And if there are people who have no clue about aluminium production, you can get an overload of information and cannot absorb it all. And it gets difficult to use it in practice. Then there has been a lot of people from the European system supporting afterwards as well in Henderson, but in a way it has been on an ad hoc basis, so when the problem occurred somebody was sent over and stayed one or two weeks to try to solve the problem.”

Bruno beautifully explicated the pedagogical principles of exposure and experience:

> ”I will never say that if you are staying in a plant for two months you will know enough. But the main issue is the experience. If you can see small aluminium explosions… You can ask Juan [the production manager in Azuqueca]. Juan has been at Clervaux [an established Hydro plant], and we had one guy two years ago at the 27th of August. He burned his feet. And I said to the guy, and we know each other very well: “Could you show your feet today to Juan?” I don’t know if you have this experience, but the feet are looking like a piece of meat at the butcher! It is not feet, it is something...”

He cannot find the right words and gesticulates intensely, trying to give shape to some fuzzily bounded object in the air; ”... you know, really a piece of nothing – meat… And I can say that I am sure that Juan this evening was not sleeping well.” He looks at us, his intense stare through his glasses, not wavering his gaze for a moment, anticipating our reaction. We just wait for more. And of course there is more.

> ”It is perhaps the best way? For me it is a good way to try to electroshock the people. Show something that is the reality! Don’t explain that aluminium can be very dangerous. Aluminium *is* dangerous! And you can die from liquid aluminium! So show that to the people, and I guess all people coming down to Clervaux, will have access at least to this picture. They have a video at Clervaux, and I guess they are accessible in the company worldwide, showing a start-up of a big company with a big explosion, where there were twenty wounded. If you show that to your people, and I have experienced that at Clervaux, but three years after we started there people are looking on it and say “it is so dangerous” and all.

> But when they are familiar with the business they do perhaps not believe all that we show. But for new people, if you can show that if you are not wearing the right clothes, or protective equipment, if you are not respecting the regulations to have dry tools to use with aluminium, if you have moisture somewhere and you don't take care of it. You will have a big risk for your life!"

The reference point for the managers of the Azuqueca project was the Henderson project and the way they had used a lot of video material in their training. Showing videos in the classroom to inexperienced people. And possibly thought that that was enough. As Sigurd said; "you know, when the people entered their built cast-house, and experienced for the first time on their own body how hot the metal was, how hot the working conditions were, surprisingly since it looks like water – they were scared to death. Scared in a serious way that inhibited their work."

In our many discussions about training, competence, projects and production Sigurd always stressed the communicative aspect of learning. "What is often missing, he said during workshop meeting in Sunndalsøra, "is the pedagogical skills to make learning happen! Models, figures, procedures and everything is of no use if you cannot communicate, if you do not get across to the others". The whole Azucueqa team visited Sunndalsøra to participate in different forms of production in an operational plant. Bruno told about the first trip the Spanish employees made for training at the Sunndal plant in Norway: "Some of the people were present when the cast started, and some metal splashed two or three meter up in the air. Juan called me and said he had seen something, and that all the people had been 'shocked'". Bruno himself jumps in his office chair to underscore the point. "700 degrees into the air! You know. Surprising, because before it is so calm in there, beautiful when the metal is liquid, you can sit there almost like at home in front of the fireplace, well not now during summer. The wood burns, you are relaxed, it is so nice, grey, really beautiful, like your cabin. But the danger is different, yeah?" Sigurd explicated the purpose of the training trip to Sunndalsøra: "We give the people classroom hours, a lot of practical training, a lot of videos, plastics, how to behave, basics about aluminium, explosion, water, humidity,

emergency procedures – you name it, we got it!" Both the Spanish employees and the Norwegian "teachers" had a great time during the practical training. Both parties praised the initiative. Figure 17 below, taken from the learning history, illustrates some key points and impressions from the training sessions.

Figure 17. Excerpt from the Azuqueca project multimedia "learning history". A collage produced that summarized some of the basics about aluminium that Sigurd presented at the operators in the first day "reception session", for new Hydro employees in Spain. Pictures also from the trips made to other production facilities, especially Sunndalsøra in Norway, made by the Azuqueca team to receive both practical and theoretical training.

A new project process category of "structuring" devices emerged out of several of the Hydro-Sintef's collaborative projects, in particular the Azuqueca and Qatalum projects. It provides a template to indicate a systematic process of training and transmitting competence to the new organization of an emerging plant, in terms of the various actors, sites and types of training implied. While numerous such templates existed for the "technical", the "hard side" of projects, few were available on the "competence", the "soft side" of projects. These aspects were also, of course, taken care of in projects earlier, but in a more ad-hoc and person-dependant fashion. The template was called the "Training trail", indicating in a flexible way the different "training posts" in a process the people at an emerging plant ideally should go through, and was advocated all the way to the top in Hydro as one key way to handle "the competence side". This is how it was presented by the head of the Aluminium metal division to the corporate management board at a meeting where strategic aspects of the Qatalum project were presented.

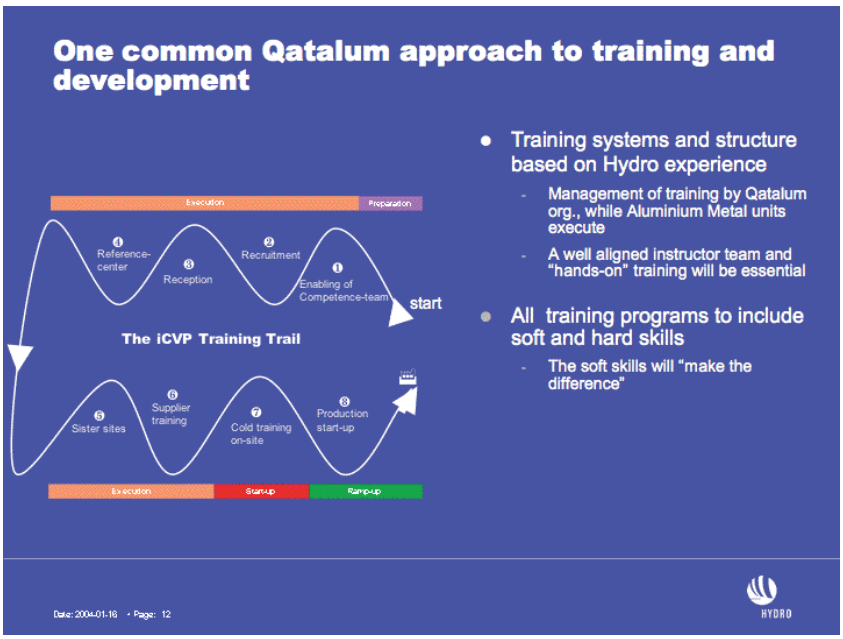

Figure 18. The training trail. A systematic approach to training and competence development in the new emerging plant organization, utilizing the dispersed network of resources in Hydro.

"Everything is connected"

The third corpus of ethnographic material I want to present is a collection of quotes taken from a host of interviews and discussions with various categories of managers that all have experiences in working with investment projects in Hydro.[85] The quotes are clustered around a few key categories. First a set of statements that focuses directly on the "soft side" of projects, that emphasizes aspects of communicative practices:

> "Underlying all of this is that you communicate well; that you communicate well between the different disciplinary groups in the project."
>
> "So it's this thing about working in a team with other human beings, and the total dependency you have of each other to get the collaboration working well, that's what's fun in everyday work."
>
> "It is when you have been struggling uphill for some time, perhaps having had problems communicating and creating alignment - really striving to get it right - and then people are beginning to see it and they put in that extra effort and they deliver."
>
> "It is this thing about presence - actually taking the time to listen and talking to people, have a dialogue and discuss things."
>
> "It is very important that you try to span out the entire solution space... and you have to be on guard for the sluggers that have strong opinions at an early stage."
>
> "(One) should never forget that human beings are social creatures first and foremost, and the greatest need when we have had enough food and sleep and sex, that is participation. It's not money, really. It is participation, to be accepted, be involved."
>
> "To listen and not just do the talking yourself."

[85] Assembled mainly through the Sintef-Hydro Projects research collaboration "Engage".

> "To be open for other angles, other sides of the issue, and to respect and make use of other people's competence. If there is someone else there who are in your discipline, then you should contact him."

Secondly, a set of quotes highlighting issues related to seeing the "big picture" of projects, the "total concept", of the wholistic view.

> "[It is] important right from the start to think 'totality'… a concept that is coherent."

> "I feel that it should always be so that everybody feel they are part of building the cathedral and not lay brick by brick ... that's really important."

> "It's great fun to be part of creating something and see that things are rising up out there in the field and that there are concrete results and not just on paper. Of course that gives you something of a kick."

> "To see yourself in the big picture, try to see totality: 'What is my role in this and why is what I am doing important?"

> "This thing about working in a matrix is an external condition and it is hard for many. It is a big challenge, and I have no patented solution for it. I think it is important that you motivate people from a holistic thinking."

> "The project owner has an extremely important role - they need to see that everything is connected. It must be persons who care about getting things to work together, who do not dive into disciplinary details."

> "So, I am saying that if there is a group of ten, if more than two or three are creative, there will be chaos, right? And you need one or two who also think that total concept is fun. You need one or two in the group who are very conscious of and good at treating stakeholders, one who has a god network in Hydro, and of course you need good specialists in each of these disciplines."

> "Some of the most important things in the early phase is about seeing the totality, in particular that you manage to see the technical and the commercial picture in connection. The concept architects are those who have a very good holistic understanding, they know a bit about the underground, a bit about everything."

Finally a small series of quotes that illustrate the frequently emphasized aspects of projects as idea driven creational efforts, is offered.

> "To execute projects is OK, but we don't live from that. We live from coming up with our own ideas that can be executed and from creating projects."
>
> "The most fun thing I do is projects - to be part of creating something."
>
> "... what's exciting is that early, the project is lead by a type of people, a type of KPIs... who don't have that feeling of (having to) deliver physical execution… they are very eager to find smart solutions. Creative smartness is really the driver."
>
> "Prior to DG2 the important thing is getting ideas to flourish, it is very important that you try to span out the entire solution space... so consider the entire solution space and explore that which to begin with does not feel right."
>
> "Celebrations are important. It has to do with team spirit and a sense that you are part of contributing with a product and that you make visible what you have done and the result of what you have done. It is very important that the one having done the job is accredited."

Some of the material presented above would possibly be interpreted in some strands of organization studies, as reviewed in chapter two, as struggles and efforts of coordinating (independent parts), of establishing work routines and knowledge sharing (between autonomous individuals), or of getting all kinds of "systems" in place to make everything work. Such interpretations would be fair and reasonable. However, I argue that such explanations holds true only as far as it goes.

Seen in synchrony the empirical material presented above signify strongly a set of recurring issues, related to: concepts, actions and representations of project work as what we might call "the materiality of imagination", or anticipation; of industrial arts as abstracting/materializing and co-evolving imaginative design work (alluding to the "other canon" and the complex notions of "technology" described in chapter five). It

adds to the foregoing analysis of projects as "concentration and projection", while further emphasis has been given to the notion of *presence* in intersubjective communication and interaction, underscored for example as "listening"; of coherence and seeing the big picture (the cathedral); that is of holistic thinking, realizing that "everything is connected", perceiving the "total concept", the totality of the project "field"; of project work for members most fundamentally related to participation, identification and acceptance; of project managing as "creation and idea work", and its deep sociality in terms of for example celebratory "rituals".

In the learning history we saw examples of issues related to roles and "taking responsibilities for the whole of the process also in your own specific little part and daily work practice". Another formulation was also used: "We look at the necessary atmosphere and actions for pulling a complex project like AAZ out of the "pond of project potentiality" and into realization in the ever expanding HAMP network". Based purely upon the experiences and interpretations of the Azucueca project field, rhetorically charged by a metaphor, we will see below that the choice of phrasing was illuminating. To enable a more adequate interpretation of the project field, I suggest at the first instance that we move from "coordination" to "coherence" as a guiding conceptualization. As described, a concept grounded also in "native" use.

The art of entangling: from coordination to coherence

We have seen that the most intensely recurring themes in the genesis of projects has to do with concepts of wholeness, of totality, of intersubjective communication, of goals and objectives. The empirical analysis illustrates how participants "struggle with", "grapple with", feel shortcomings in relating with and communicating the wholeness of their projects. It seems to be important not to get too lost in details; to see your part in a bigger picture, in a constant strive to avoid fragmentation as reality successively unfolds. The interpretation put forward here is that this is indicative of a an absence they feel of a an ontological space, and a corresponding epistemology, in which to fully

acknowledge, accommodate and finally, in their idiomatic vocabulary, “to manage” the wholeness of the projects. This more or less opaque realm of their projects, which in the para-ethnographic narrative material is given strong emphasis of importance, is as a short-hand for vast complexities, dubbed in “native speak” “the soft side of projects”. The soft side, as it were, is the key, but a mysterious and difficult to interpret, let alone “manage”, key.

It has been described how projects and projects work on the ontological level most profoundly can be described as involving *potentiality*. The realm of projects is a domain concerned with bringing forth, realizing, emerging, enabling a potentiality at all levels. Likewise, bringing forth a project and realizing it as a productive plant can fail at all junctures. Not until it has reached full production in the sense of its design capacity, can the project be assessed as a success or not. At this juncture in time the project can be evaluated if this one particular path of potentiality *realization* brought forth the anticipated fruits. The temporality of the principle of potentiality, among other things, is illustrated in the figure below.

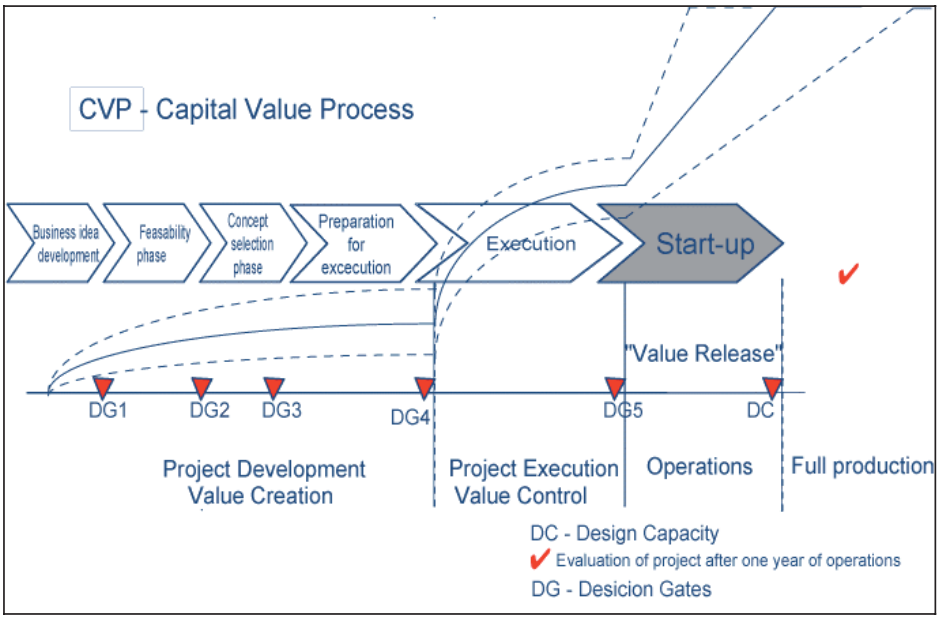

Figure 19. Dynamics of potentiality and temporality in the CVP process, merged with the start-up phase in operations, and full production. The different main phases in terms of conceptions of value is also indicated. Hydro concepts of "value creation" and "value control" is supplemented by a construct of "value release".

In the project development phase the value is "created" and enfolded as the potentiality of the project. In the execution phase the potential value is controlled as materialized in a plant. In the next critical phase, from DG5 when the project is formally closed (and operations has taken over) until the plant has reached its full production design capacity, the potentiality enfolded in the project must be "released" and realized in delivering quality production and products to the market. The project can "break-down" and become a failure almost at any juncture, even after its transformation into a plant at DG5. If the customer side, the demand side does not live up to expectations, or cannot be made to live up to expectations, the plant realization of the project, even if it was able to produce at design capacity, would be a "failure". This in the capitalist sense of not making a profit. And on the other hand, a "bad" project, making the plant reach design capacity for example a year later than planned, would also make a failure, possibly endowing the plant with a "curse" of not ever making a profit. This because the cost of the delay in terms of lost income, expert consulting, and so on, lowers the internal rent to such a degree that the plant will struggle economically long into the future. The bringing forth of potentiality, as we have seen, involves a range of complex polymorphous embodied intercommunication and entangled "instrumentation" issues.

As noted above, the domain of life and nature were *potentiality* has been most rigorously described, is in quantum reality. Like it was described earlier, with Bohm this realm of potentiality is labeled the generative or *implicate order*, a concept gaining popularity also in anthropology recently (cf. Johansen 2005; Tim Ingold[86]). Whenever we move around in the explicate order, the soft side seems to be tacit and invisible, and only indications of the implicate order can be observed. However, when knowledge is seen as a process, the frustrations with totality that participants report, might be seen in

[86] See footnote 59.

another light, because; “Ultimately, the actual movement of thought embodying any particular notion of totality has to be seen as a process, with ever-changing form and content” (Bohm 1980: 80). With attention to this very process in its flux of becoming it restrains us from thinking of the content as a final and static reality.

The issues that have been investigated in this chapter (and the former) point to the following preliminary propositions, summarized in a proposed conceptualization of an ontology of “grounded potentiality”:

a) The reality of the processes of bringing forth and realizing projects seems to be nothing like the reality of the product of the effort. The clockwork operations of a machine plant are preceded, or presenced, by a reality of processes in projects that are not at all clockwork like. However, based on our investigation, we might also question the whole notion of the ”clockworkings” of an industrial plant. It has been illustrated that the standard notion of ”project management” as structural planning and prioritizing in an ”atomic universe” of disaggregated elements and parts that needs to be coordinated, is the outcome of the worldview or creation myth brought forth in inspiration and departure from classical physics (see below).

In the same way the clockwork perception of the operational reality of an industrial, mechanized plant might be questioned. For example the continuous “tuning” and complex problem-solving in the production process, to enable a stable quality metal product, is embedded in various forms of tacit and implicit, contextual and procedural know-how, very far from being solely an explicit “knowing that”, declarative “clockwork” process. This latter perception was made idiomatic in Charlie Chaplins film ”Moderen Times”. However, the classical physics perspective seems to be a surface point of view, a perspective of natural and social reality as a ”flatland”. The classical physics of Galileo, Descartes, Kepler and Newton, from which this worldview has been attributed, rests upon some basic assumptions about the status of reality, as outlined earlier: locality, object separation, simple causality, and mechanic determinism. Quantum mechanics and other related recent advances in physics (i.e. Hadronic mechanics) have rendered all of these assumptions questionable and out of date. Out of

their questions and findings emerges a new reality, and thus slowly a new worldview, indeed a new ontology of modern man might be carved out.

b) The field of knowledge constituting the genesis of productive projects is found to be a form of movement or a process of "bringing about". I support the notion made by Bohm (1980), drawing upon the history of philosophy from Heraclit to Whitehead, to consider reality and knowledge "itself" as process. What has been explored in this chapter, are the particularities of the knowledge reality processes that constitute, at a deeper level, the bringing forth of productive industrial projects. The movements and flows of this co-creation are complex and multi-layered, "mono-plural", and wholeness is primary. In points towards the generative or implicate order, in Bohm's jargon.

While the "conventional way" of interpreting the imperative of seeing "the big picture", of the cathedral, the totality, as expressed by the participants themselves, would possibly be that in order to construct unity and coherence out of the fragmented elements of an atomistic reality, a vast systematic machine of means of coordination and planning and so on and forth is necessary. Otherwise nothing would become, nothing would endure, and nothing will be. This is implied in the conventional view of "managing rationality". From the perspective advocated here, this narrative is wrong at its core, even if some of its peripheral manifestations, or "symptoms", might be similar and "correct".

In the interpretation here, the fundamental aspects of creating projects entails efforts of "tuning in to", of "connecting with", of getting in touch with, the wholeness that already is "present" at other levels or "orders" of reality. In project work these are the realms of ethos, of atmosphere and ambiences related to the subtleties of communicative action; of linking up to, of being part of and releasing the power of intersubjective intentionality. And of course, all the rest of the unfolding and objectifying trials and tribulations that follows. I argue, however, that without the former, projects are doomed to catastrophe or at least to be unsuccessful. And as the

reviewed track record presented above, of a diversity of projects historically, cross-culturally and across sectors show; success is indeed difficult.

c) Furthermore, the investigation has invited for a shift in how we understand the basics of ”aggregation” or, the underlying dynamics of the generativity of project genesis itself. Rather, as is common in the literature on management and project management, to focus on coordination and control, we suggest that the guiding conceptual heuristic of the ontology of “grounded potentiality” rather should be that of (integral) coherence. The power of *intersubjective intentionality*, the *ambience of enabling*, the *materiality of anticipation*, all our major issues, suggest that the primary guiding conceptualization could be *coherence* rather than coordination. Instrumentally this implies an understanding of managing the processes of bringing forth projects as efforts of generating coherence of attention and energy towards goal finding and goal achievement.

d) In relative opposition and complementation to the social constructivist position, I have argued that the “social reality of construction” is not constituted through a process of “bottom-up” construction of “building blocks” weaving collectively the social fabric. Rather, the “social reality of construction” is characterized by a whole-part and process-form dialectics that moves both vertically top-down and bottom-up, and horizontally inside-out and outside-in. Metaphorically illustrated by the Klein-bottle. From the participant’s imaginations about the whole, the end result, the purpose, the goal, the “cathedral” or the “pyramid”, subsequent processes of id-entification are brought forth. This process is the achievement of the “delusional certitude” and “optical illusions” involved in conceptualization, objectification and “thingmaking”. This genesis of objectifying is produced out of a background of more or less inchoate “wit and will” modalities and emotional and socio-technical flows and movement. As creations of “joy and pain”. Temporary building blocks of some durability are thus constructed, and are again included in a process of re-assembling and instantiating the whole in a new form.

The key issue here is the notion that construction is considered the process of bringing forth, in a *combined materialized and abstracted sense* objects of "id-entified" sub-wholeness out of a background of flow. In Heidegger's terms, a process of revealing. The critical element is not the construction of wholes out of given building blocks, or the construction of building blocks from which to construct wholes. What is at stake, I argue, in the social reality of construction, is the genesis of new forms of wholes perceived as wholes of successively increasing "density", "rigidity" and durability (in the abstracting/materializing sense), out of a background of entangled flows or movement. Again, this argument is sought captured in the proposition of an ontology of "grounded potentiality".

In such a way we can understand Latour's phrase that "technology is society made durable" in another light. In fact, the term "precensing" as used by Heidegger come from "Wesen" as "Whären", meaning to last or endure. In the expression "to come to presence" the meaning "endure" should be strongly heard (1977: 4-5). As for example Bergson and Piaget have informed us, our human logic is the logic of solid bodies, through our embodied experiences with discrete objects on the macro-level. Fuelled again by delusional certitude and optical illusions. However, the experiencing in Hydro projects also keeps people in touch with another reality, that of movement, flows and transformations indicative of the implicate order or "quantum reality" pulsating below/above the surface. In figure 20, the basic steps of the present perspective are outlined.

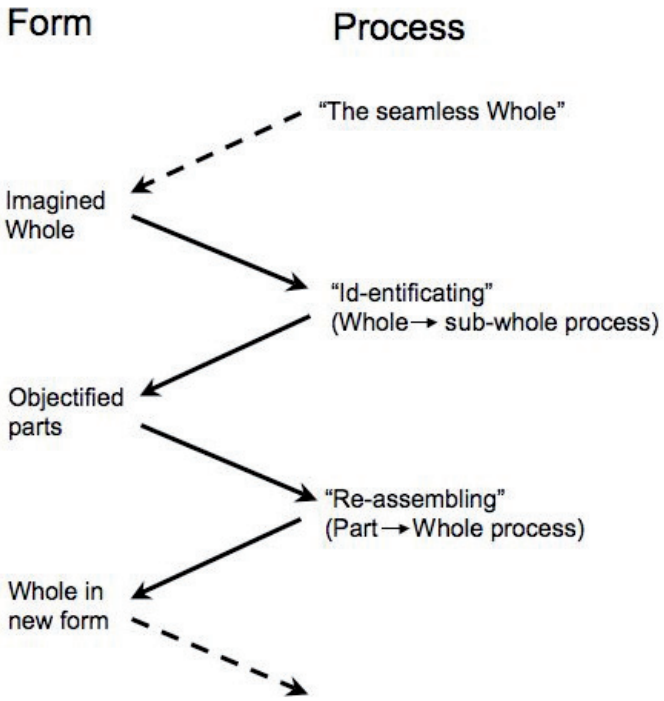

Figure 20. An ontology of whole-part relationships indicative of the experiencing in project and also "midstream" production work (for the latter argument see below).

In the empirical context of the "social reality of construction" investigated here, the processes of creating, re-creating, of making and unmaking, of the acute "processuality" and whole-part dynamism;[87] of the materiality of imagination and anticipation, as it were, puts the fundamental interconnectedness that the new physics has revealed at the "micro-level" also at the forefront of human experiencing at the "macro-level". The vivid imaginative reality of an *unmade* plant, or "unconcealed" plant in Heidegger's terminology; the levels of recursivity in its realization in new co-evolving structures,

[87] Here it is worth mentioning that Rowlands (2007) ambitiously proposes a fundamental description of process in a "universal computational rewrite system", in an effort of creating the simplest and most abstract foundations for physics to date. Leading to an irreducible form of relativistic quantum mechanics he depicts the system as moving in tandem between the two main operators "create" and "conserve", and thus the system continually "rewrites" itself.

and also the extreme bodily embedding and symbolism in the remelting and casting of metal production (investigated in chapter ten); the emphasis on totality and wholeness, and much more; all testifies to the strong experience that the most solid of (all kinds of) objects are brought forth and informed by more fundamental processes of and in reality.

And this more fundamental reality does not necessarily exist unnoticed. As Nadeau and Kafatos writes: "… even the human eye is capable of registering the impact of a single photon, and the structure of everyday objects is emergent from quantum mechanical events" (1999: 97). The experiencing reality of "construction" is made constantly aware of the fact that even the most solid of objects melts, molds, changes, and can be recreated in numerous ways. In the remelt casthouse for example, the operators and others are (sub)consciously and bodily, indeed emotionally, informed that the stability of bulk matter, the rigidity, uniformity and coherence of the matter and its mechanical, thermal, chemical and optical properties, they are all fundamentally subjected to the rules of quantum mechanics. In the genesis of projects these features are arguably even more pronounced.

These characteristics of projects as a form of wholistic imaginative anticipation, and of production as flows and fundamental transformations, are furthermore mirrored in the entire integrated value chain logic of aluminium production in Hydro; in their conceptualizations of "upstream", "midstream" and "downstream" production and business. The conventional way of thinking is that upstream is more close to the raw materials and thus more "primitive". The more downstream, the more processed the goods are, the more advanced and "knowledge intensive" it is. This conception might be fundamentally questioned.

What is flowing upstream, flowing up the stream, "up the river" as it were, are different types of requirements of use. This alloy must meet these and these requirements, dependent upon which type of use context it is to be applied in. Be it housing, packaging, transportation, ICT, or whatever. Downstream, downwards "in the stream", flows of course metal products. This is not, from the perspective pursued here, the most significant content of the flow. What is more important is all the ideational and

knowledge elements that are enfolded in the metal manifestations flowing downstream. All kinds of knowledge related to the constitution of the metal and the variety of potential uses for it, the limits and the horizon of use, so to speak, are enfolded. The metallurgical knowledge is heavily research intensive. This interpretation is supported by the fact that Hydro and their research partners acknowledges that their downstream innovation efforts has been more targeted towards development than research. It is their upstream business that has been most engaged in basic type of research efforts. A notion also supported by independent assessments (Wulff 1992; Øye and Ryum 1997; Sand et al. 2005; Karlsen 2008). Although somewhat controversial, upstream and not the least midstream may indeed be perceived to be *more* research intensive than downstream. This also explains why process innovations have been continuous for very many years, creating ever anew its potential for new and better products.

The reason for the conceptualization of downstream as the most knowledge intensive might lie in the conflated world-views and models used by researchers in understanding these mechanisms. While no doubt upstream is "closer" to raw materials, upstream is also, at least in the context discussed here, where the *potentiality* for diverse unfoldments resides. And there are vast faculties of anticipation, creation, innovation, ideas, spirituality and technology involved in the *manufacture of material potential*. This reciprocal dynamic might be translated into the conceptual pair of technology driven versus market driven innovation. The latter points to the idea that customer interaction is one key requirement in the definition of what is knowledge intensive in the "knowledge economy" (see chapter one and two).

How can this be reconciled with the notion that upstream/midstream along the value chain is the farthest away from the customer? Above I stressed the importance of anticipation. There is reason to say that all the things that emerge out of customer interaction, and market based innovation, flows all the way up to the engineers of material potential. Far up in the river all these constraints and possibilities needs to be anticipated and the ideas need to be manifested in the material metal for all of the

downstream potentials to be utilized, or better, in the terminology of "quantum ontology", to be "actualized".

We might then argue that a key issue in creating industrial activities of high value creating potential is to build capacity for "transformability". In one sense this can be explained by engaging in economic activities that are brimful of *learning potential*. Again the significance of potentiality. The aluminium industrial business has been conducted for over hundred years since the birth of hydrometallurgy in the late 1880's, with the invention of the electrolytic aluminium process in 1886, the cyanidation process in 1887, and the Bayer process in 1888 (Habashi 2005). These basic technological inventions have provided the foundation upon which the aluminium industry has been built, a history that until the present day has been fuelled by continuous technological changes and innovations. High learning potential is related to the phenomena of increasing returns in the economics of knowledge-based production, heavily stressed in the "other canon" of economic theory and history (see chapter one).

Even though upstream is closer to the raw materials, the upstream I have been talking about is *processing* of raw materials, not the assembling or reaping of it. Norway never had the raw materials for aluminium production. Norway had power. The huge waterfalls were tamed at the turn of the century by Hydro and others and turned into energy. In Hydro first for the production of fertilizers and then for the aluminium industry. Energy is potential. As we shall see in chapter nine, Hydro refers sometimes to aluminium products as "energy banks". Maybe even the lack of the raw materials was a contributing factor in Hydro's success. This proposition is made by aluminium historian Jan Thomas Kobberød (2008).

More generally, as noted by Reinert: "Paradoxically, being poor in natural resources could be a key to becoming wealthy" (2007: 7). This was systematically understood at least since Antonio Serra produced the first theory of uneven economic development in 1613. Serra wanted to explain howcome Naples remained so poor in spite of its vast natural resources, while Venice, with its lack of such resources, was "at the very centre of the world's economy" (ibid.). The key according to Serra was the

manufacturing sector in Venice, displaying many different economic activities all subject to the falling costs of increasing returns, while Naples relied on cultivating their land, and thus relied upon economic activities subject to diminishing returns.

In the terminology of Bohm then, the upstream (but well "below" the "raw" natural resources) and midstream production is a form of enfolded potential. In terms of economy, it is enfolded wealth potential. It is also not only an energy bank, more importantly it is an abstracted/materialized idea and imagination-bank. The diverse downstream and customer physical products are "all" anticipated in the idea bank. The downstream is an unfolding realization and actualization, a successive series of explicating the enfolded potential.

In Part III of the present work the lens is turned towards the dynamics of the *wealth creating* potential. The attention is drawn to issues of finance and economy and how it is constituted through managing actions, in the realm of investment projects, in the corporation and in contemporary capitalist conjunctures.

PART III

HIGH FINANCE AND THE "WONDERFUL MOMENT" OF MILLENNIAL MODERNITY

Chapter Seven

7. The Turn to Enchantment: Investing in Projects and the Shift to Finance

Accumulate, accumulate! That is Moses and the prophets.
(Marx, quoted in Arrighi 2002: 229)

Globalization must not become financial imperialism.
(Muhammed Yunus,
Nobel Peace Prize inauguration speech 2006)

The practices of investing in new projects in Hydro provides a fertile soil for a fascinating study of some of the ambivalences enfolded in the economic logic of financing new industrial "ad-ventures". As outlined in chapters five and six Hydro employs structuring and structured models for both process and organizing issues. Of particular importance for the decision-making process is the Capital Value Process (CVP). Concerning the financial aspects of the project life cycle the major institutional event and "turning point" is "Decision Gate four" (DG4) of the CVP. The CVP process model is perceived as a support, in all of the aspects of the project, for investment decisions. The model is thus quite appropriately designated with the name "Capital Value Process". As noted in the former chapter, however, what's in a name is far from trivial. As a reminder, schematically the major steps in the process are outlined again below (see also chapter six).

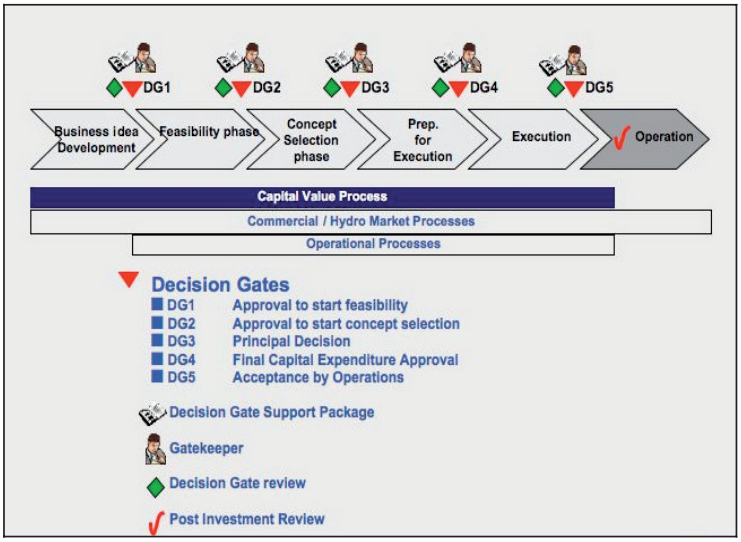

Figure 21. Outline of the main phases and events of the CVP.

In this chapter I am concerned with the financial and more broadly "economic" aspects of projects, and subsequently the wider ramifications of the "financial turn" instilling

the principles of "value based management" throughout the Hydro organization since 1999, following their strategy process called "Focus for the Future" (Lie 2005).

As mentioned, following the CVP the main event in the project life cycle in terms of life and death for the project is "Descision Gate four", the DG4. It is at this occasion the "Final Capital Expenditure Approval" (CEP) is made – or not made. It is a meeting of the Corporate Management Board were they in the name of Hydro as a legal person definitely declares the life or death of an emerging project. It is the proverbial Caesars' thumbs up or down. Thus, the first part of this chapter is a description, based on participant observation, of the DG4 meeting of the Qatalum project – the largest aluminum plant project the world has ever seen. A joint-venture with Qatar Petroleum it is an investment of $ 4.8 billion, and expected to be in full production with a gas plant, a smelter and a casthouse in mid 2010.

The subsequent sections are first a description of the introduction and "take-over" of financial means of managing and control, and following are some of the engineer's responses to this shift. Afterwards discussions of the wider context of Hydro "value-based management" and the "shareholder value" paradigm as it has been embedded in Hydro practices are offered. Backed by finance figures, statistics and historical data I conclude the chapter by noting that thee has been a significant shift in some of the central legitimizing idioms of managing in Hydro project and corporate work. This transformation, I argue below, is moreover illustrative of a "turn to enchantment" in a globalized economic world.

Decision Gate Four

Once again I was approaching "the house of glass". The new corporate headquarters building at Vækerø in Oslo was the site for the "ritualized" meeting of the day. The Qatalum project was to be passed through "Decision Gate four". The aluminium management board was to decide upon the final approval, or the somewhat more unlikely possibility of disproval, of the project by way of deciding upon "the final

capital expenditure approval". As I was approaching the location by the means of all the major modern media of transportation – taxi, airplane, train – I was excited in a manner I could not remember I had been earlier on my numerous visits to the headquarters. One reason for the anticipation was the secretive build-up to the meeting. Almost exactly two years earlier I had unsuccessfully attempted to get access to a meeting of the aluminium management board while participating in the opening ceremony in Suzhou (see chapter three). I had therefore spent a few strategic thoughts about different approaches to be able to participate at this meeting. After interviewing members of the corporate management board the request was accepted, and I was positively surprised. Also, the way in which the "green light" was communicated raised the bar of anticipation. In the e-mail of confirmation from my "gatekeeper" (not the DG4 gatekeeper), or rather, my gate opener who made my participation possible, I read the following:

> "… can in the meantime happily inform you that we are positive to your attendance when the corporate management board discusses the project in preparation for a final recommendation to Hydro's Board of Directors (it will also be treated in the Corporate Assembly). Conditions are, however, that we are allowed to read through your description of the meeting/discussion before you finalize your dissertation, and that the discussion/decision in the meeting is treated confidentially until we publicize the final building decision (probably during summer). The meeting is of course only the last step of many discussions about the project the last years, but in the case you think it can be of use to be a "fly on the wall", you are hereby welcome. I will ask our corporate secretary [direksjonssekretæren]… to send to you a notice with the date (probably during May) when it is decided, and also ask you to keep the time in question to yourself due to that we never publicize [kringkaster] date and time for administrative discussions and decisions, neither the agenda of the Board. The decision will be made public when it is treated by the Board, with a recommendation to the Corporate Assembly" (*my trans*.).

Practices of secrecy produces many different social effects, not the least an aura of exclusiveness and importance, and have a certain appeal to a great variety of people's psychology. As diverse examples as the successful conscious strategy of secrecy as a

means to disseminate the "Shell scenarios" within the organization, and thus spread the word of corporate strategy (Davies-Floyd 1998), and the dramatic employment of secrecy in ritual initiations for the purpose of disseminate cultural knowledge among the Baktaman of New Guinea (Barth 1975), testifies to the power of secrecy in the unfolding of social reality. Thus member's talk about discussions, opinions and decisions made by "KL" [Konsernledelsen], the corporate management board, or the top aluminium management, in Hydro instigated considerable interest, spreading of informal information and rumors. These meetings had as such a symbolic significance that transcended the "actual" content agenda of the meetings. Its symbolic power, partly invested by the ritualistic construction of secretive boundaries, certainly had an affect on me as well. After asking, I was friendly advised by another corporate assistant about "the dress code"; "people always ask about that", she laughed, "but persons attending these meeting usually wear a suit and a tie, so that could be an idea" (for an analysis dress codes as material metaphors of managing see chapter ten).

Thus I entered the "glass house" prepared for any question I might get about the projects I had been working on in collaboration with Hydro or about my dissertation work. I was somewhat anxious waiting in the lobby, marked by the experiences gained at the last two interviews I conducted at the same place. One of them was with a member of the corporate management board, and the other with the President and CEO Eivind Reiten. At both occasions the lobby had somehow managed to forget to inform the executives' secretaries about my arrival, so they came down and fetched me 10-15 minutes later than the time agreed upon. And time schedules are not something that is dealt with as one pleases at the headquarters. So this time around I made absolutely certain that my arrival had been communicated to the right person. After being guided through the locked entrance gates, the friendly "dress code" assistant guided me to the elevator and into the office spaces were the top management meetings are held.

Other people that also was to be attending the meeting met in an open space with stylish furniture, encompassed by glass offices and most notably an informal meeting room behind glass walls and doors, with a large artificial open fireplace and two

adjacently positioned designer couches. Taken together that particular room, into which we had a clear view from the open space, gave a first aesthetic impression of being an intimate sitting arrangement at some exclusive mountain holiday resort. Its glass enclosure and its position on a stylish office floor made the room at the same time fascinatingly appear as being at display in an art gallery. I greeted the five other people present; most of them seemed to already know each other. The corporate secretary announced that the meeting taking place was a bit behind schedule and that we had to wait some minutes to enter. Everybody present small-talked about business related issues. I asked a man that turned out to be the "Controller", about his assessments of risk in the project. I jokingly announced that; "I guess there are no risks in such a well managed project?" Prompt laughter from the controller and the assistant to the head of the aluminium division. "Well", the controller replied, "there are of course quite large values at stake in the project".

We were standing beside the main sitting arrangement in the open space, in which sat the President of the Qatalum project and the head of the aluminium division (the Executive Vice President). They were discussing different aspects of the project, progress and challenges. Particularly a month's delay that had recently surfaced with reference to the official project schedule caused considerations. One month in the course of a five-year project didn't seem like a big problem, but as the discussion unfolded it emerged like something possibly serious. The head of aluminium explained that due to the way sales contracts are made for a whole year this one-month delay could in the worst-case lead to problems in securing contracts for the first year of operation of the Qatalum plant. This scenario could unfold if the plant completion came too late to reach the qualification process of the product qualities. In this case securing sales contracts for 2010 could be problematic. So the one-month could possibly have consequences for the whole year. During the discussion of the delay in the meeting taking place some minutes later, the concern about the sales contracts for the whole year was not aired explicitly, but different strategies, like starting up some of the production

cells earlier than others to secure “customer qualification” even if the total plant was not ready, were indeed discussed.

In the open space sofa group, still outside, the two men were also discussing the political positioning of the project in Qatar. “Will the project get fast enough and high enough on the table of the Emir?” asked one of them. In the competitive environment for industrial projects in Qatar, they discussed if their project had the sufficient support from high-level politicians. Three others joined the open space, among them the Project Manager. He voiced concern for the delay as well, anticipating the discussion later in the meeting. In a brief intermezzo, prompted by the head of aluminium’s combined question and statement directed at me, that “you are aware of what is discussed here is meant for this room only”, I had to explain my role and that agreements concerning confidentiality was secured. Two financial managers, seemingly appearing out of thin air, entered the “holiday resort room”, closed the glass doors, and had a private conversation. It was a fascinating scene. Even here, were access was strictly regulated and predictable there seemed to be a need for secluded space. The need could easily be explained for in situations of business negotiations. When in use now it produced a paradoxical effect. Because of the combination of the absolute visual transparency and the complete auditory impediment, the social significance of using it had the effect of broadcasting to the group outside the conceptual categories of secrecy, importance and exclusivity themselves.

The corporate secretary announced that we could enter the meeting room. A large meeting table in what looked like mahogany dominated the room, demarcated at one of the long sides by a window wall with a view to trees and the sea, at the adjacent wall intense works of colorful abstract art dominated. The ten or so people already present (it was difficult to account for everybody all the time, as some people came and went discreetly), rose and greeted us welcome. Unsure about the custom I found a place along the table near towards the entrance. The ones I had not met earlier came over to me and we shaked hands. Eivind Reiten, the CEO, came over as well, remembering me from a recently conducted interview with him in his office. The meeting resumed

quickly. I noticed to my astonishment that the brown leather support, for plates and cups at each sitting place around the table, had a small engraving of a Roman style armor clad soldier head. My speculative metaphorical conception of Hydro managers as incarnating modern "aluminium armored Apollonians" suddenly had a very concrete symbolic representation.

Reiten, seated in the second last chair with his back to the windows, announced that the meeting that commenced today was more the plucking of fruits that had been grounded and groomed in a long process of development. The meeting takes place using Norwegian language, something that reflects the composition of top management. He welcomed the Hydro "owner's representative" in the Qatalum joint-venture company to present an overview and status report of the project development. The self-evident Powerpoint slide show, always present in managing meetings, projected on the canvas. Several issues were raised. Cost numbers, market prices forecasts, margins, LME, Alumina, Amperage… A brief discussion emerged with respect to the degree of effectivity of the power plant. There was a challenge with efficiency due to the hot outdoor temperature in Qatar. The project President announced that "we should have built it in Norway… here it is optimal in this respect". Quiet laughter spread around the table. "Yes", replied Reiten, "we are entitled a few advantages up here in the cold. To bad we are lacking the gas." More soft and appreciative chuckling. The presenter lined up assumptions made at the previous Decision Gate, DG3, and changes and adjustments made in the project since then.

The major issue of the discussion was the new months delay. The reason was related to a problem with supply of sand to the site. A new road was to be built to enable transportation. The representative said: "It really takes a long time to get the necessary approvals for an alterative road, we have to go to the police, and they refuse to meet more often than once a week". The head of aluminium added: "With this last month delay we lose 0.2 percent on the internal rent. The two months we have lost earlier in the project had combined only a 0.1 percent negative effect on the internal rent". In the Powerpoint presentation all major adjustments and changes with reference

to assumptions made at DG3 had their effects measured in positive and negative changes to the project's projected internal rent. That is, to the future profitability of the project. The development of the LME real prices had a positive effect, likewise expansion of the power plant capacity and the changes in the tax situation.

When the one-month delay has been discussed at some length Reiten announces: "The challenge in the project is not *that* month, but the general observation that things take time in Qatar. We will have to face more such similar crossroads. And we have to clutch ourselves to the edge of the table ["bite oss fast i bordkanten"], to keep the schedule. It is mostly psychology this… not that we here around the table do not know what is really at stake." The project manager wants to clarify something: "I just want to stress that the problem with sand and the road may seem insignificant, something that should be easily handled, but to cater for the 1000 trucks coming in and out of the site every 24 hours we need to set up a roundabout in the middle of a four field motorway were cars fly by at speeds reaching 150 km/h." Around the table the point is taken. Reiten replies: "We need to take into account that next time it is something else. In relation to our partners, the key is that if we start moving the schedule it quickly becomes a slippery slope, time will be eaten again and again."

The project manager, later in the meeting, comes back to this issue and asks; "the time pressure, is it on us or on our partners, because I cannot see how we can drive ourselves out of this problem." Reiten clarifies: "It is on them, for sure, but it is a tactical issue from our side" [to communicate that the schedule is fixed]. And adds in an expressive tone of voice, looking at different people down the table: "There might be other roundabouts emerging down the road…" The project manager agrees: "In relation to our partners I believe this attitude is the correct one". Reiten closes this round of discussion: "as always, you just have to be rational and do the right thing".

A mixed formal and informal atmosphere characterizes the discussions. Participants seem to have their say when they have something relevant to contribute. When a discussion goes on for too long Reiten smoothly, utilizing both humor and mild authority, closes the subject and directs the meeting forward.

Tax issues are thoroughly discussed, tax holidays, tax rates, tax in profits brought to Norway, owner issues in terms of country registrations, tax agreements with governments, and so on and so forth. The theme of "major risks" is introduced by the presenter with what he calls "an oddity". On his slide he has covered the drawings of the plant site with soccer fields. "The Ormen Lange site at Aukra covered 100 soccer fields", he says in cool anticipation of his key point. Everybody in the room knows that the "Ormen Lange" is the largest industrial project ever commenced in Norway, and that Hydro has the project management.[88] "Now, have a look at our site in Mesaieed… it covers 250-260 football fields", he smiles. The others chuckle. Reiten says, "Yes, this tiny little Ormen Lange project…" (To get an idea of what was presented on the screen look at figure 22, which is similar to the one used in the meeting).

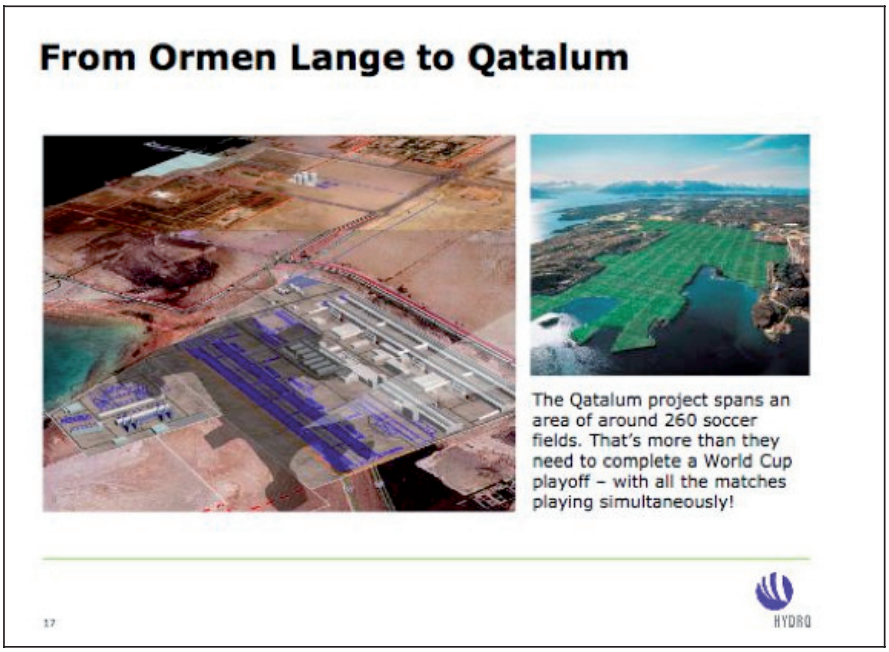

Figure 22. Comparing the size of Hydro's largest projects. Ormen Lange at Aukra in Norway, covered in soccer fields, compared to the Qatalum Mesaieed site in Qatar (Source: Tom Røtjer, Executive Vice President and Head of Projects, Capital Markets Day, 09.09.07).

[88] See http://www.hydro.com/ormenlange/en/

Reiten subsequently turns his attention down the table, the presentation phase seems to be over, and gives the word explicitly to the "Controller" for an assessment of the risk picture: "Does the controller have anything to add or ask?" The "Controller" takes the floor. "Yes, the project seems to be well balanced. The concern is related to schedule, this is a distinct concern. And also progress in terms of access to gas." Reiten summarizes: "In respect to changes that has happened since DG3, they are mainly on the positive side, [that is] from an arithmetic accounting type of perspective ["regnestykkeperspektiv"]. Concern is foremost related to schedule, the time it takes to "drive things through" the bureaucracy." Then he turns the attention to the project people and asks, "are you in possession of the right people?" The project President replies: "We have a challenge in getting more. The average age is also high, 58 plus." "After project completion they are 62 plus," laughs Reiten. The chief financial officer in Hydro announces; "there is a considerable riskiness related to currencies". The head of corporate finance downplays the risk involved: "That is fair enough, but in Qatar we know the currencies towards which we are exposed".

The meeting draws to a close with a discussion about the formal procedures and the timing relating to the announcement of the final approval decision. There are a few tactical issues to consider to "receive applause", as Reiten put it, in the other forums that subsequently need to consent to the final decision. There are issues of obligation in terms of information dissemination, and what should be the proper chain of information events. After reaching some sort of consensus on these issues Reiten declares:

> "With this then, I take it that the management board approves the project and will send a recommendation to the Board of Directors". Silent agreement. Some final words from Reiten closes the meeting: "DG3 was the steep hill ["tunge kneika"] for us, to adjust ourselves towards a new cost picture. It is not every day we commit ourselves to a 2.5 billion dollar investment. And also in days and periods with other aluminium prices we need the mental readiness ["beredskap"]. However, it will only be for a short time that this plant will be the most expensive one built in the world. This is the start of a new strategic chapter, with phase two of the project the plant will produce more aluminium than the whole of Norway combined.

> The general development since DG3 has been positive, something good, something bad, but in sum a positive development. But that our main challenge in Qatar turned out to be the lack of sand! I'm sure we will learn even more."

Figure 23. Challenges with sand in Qatar (Source: Tom Røtjer, Executive Vice President and Head of Projects, Capital Markets Day, 09.09.07)

I am shortly thereafter whisked out of the meeting space by the corporate secretary, manages to secure some interview deals in the stairway down, in the rush of things I forget my coat in the meeting space wardrobe, is saved by the helpful "dress code" assistant and guided through the locked gates and exit the glass house writing ferociously in my notebook. Outside, waiting for the taxi, I strike a brief conversation with the main presenter at the meeting. "You see", he explains, "we need sand to build, but they protect their sand mounds more or less like we protect our fjords".

I concluded afterwards that I had been participating in an organizational ritual that had established an institutional fact of huge consequence and significance. This in

spite of the CEO's remarks that the meeting had been more the harvesting of seeds that had already been planted and cultivated. In the trajectory of an emerging project, the performativity of the utterances of approving the Capital Expenditure Proposal (CEP) is according to speech act theory (Searle 1969) the moment when the project is turned into an objective institutional fact. As Searle notes: "Performative utterances are members of the class of speech acts I call "declarations"… These utterances create the very state of affairs that they represent; and in each case, the state of affairs is an institutional fact" (1995: 34). The declaration of the CEP instills the project with financial muscles and breathes institutionally objective life into it. From being very much live and well in the social realms of organizational practice it is by the utterance of a few words transformed into an institutional reality with a future. Interestingly is thus the perception of projects, their ontological reality status, so to speak, in the process of origin until CEP approval (see chapter six for in-depth ontological reflections).

The CEP approval declaration is metaphorically the finger of God, as it were, when in one brief statement it transforms a potential future reality into an effective (future) reality. After the CEP declaration, there is, *de facto*, an existing project in the institutional sense. Even though the project had been developed to a quite mature state by means of formal and informal organizational practices already before the CEP approval, the ontological status of the project before and after the CEP approval is very different. The CEP signifies an institutional belief in creating the future.

A number of interesting aspects related to project management practices are illustrated in the empirical vignette above. Throughout the rest of the chapter I will refer back to various issues from the DG4 event. First let us explore one of the most significant features of the meeting. The exchange was held in a combination of personal and "organizational" anecdotes, conveyance of institutional "facts" and not the least the communication of numbers as a regulatory and controlling mechanism. The major numerical device for assessing the project development as a whole is the internal rent, the measure of the future profitability of the project. Every major change in the project was assessed by an equivalent amendment of the internal rent estimate. Thus it is a form

of financial control mechanism for the emerging project as a whole. This mechanism and numerical representation is a crystalline expression of the profitability concerns embedded in the practices and the naming itself of the project decision support process – the Capital Value Process. As such we might say that the CVP in its internal rent orientation show that the Hydro life of projects has been marked by the corporate rise of finance control.

Inventing finance control

They ways in which the complex activities and interdependent relationships developed and changed with time in the Qatalum project, they were in a series of analytical steps translated into internal rent effects prior to, and conveyed in the DG4 event. This analytical approach as a strategy for project control is based upon so called "sensitivity analysis" – how the variation in the output of a model can be apportioned to different sources of variation. The aim of the analysis is to enable managers to understand the underlying variables. Sensitivity analysis is used in several domains, including financial applications and risk analysis. However, a number of problems are associated with such analysis in the context we are exploring. For example, it does not properly take into account that variables are often highly interdependent, that change in one variable changes others. Also, it is contingent upon subjective interpretation in terms of assigning value ("pessimistic and optimistic") in various parts of the analysis.[89]

For example, from the DG4 event, time-delay was one variable producing an effect on the internal rent, but underlying the time-variable is a complex composition of a myriad of entangled and interacting activities. In short, the "rhetoric" of the sensitivity analysis masks complexity and subjectivity in its translation of project practices into "internal rent" effects. Although members are conscious of this, the "analytical concealment" in the representational rhetoric nevertheless displays a logic of

[89] For a brief overview see http://en.wikipedia.org/wiki/Sensitivity_analysis#Business_Context (August 1, 2007).

"computational determinism". Such analysis and mechanisms are viewed by members as "tools" for management, and not as direct representations of reality. However, although not studied directly, keeping such mechanisms in a concurrent "double standard", of both just "tools" for interpretation and control as well as rhetorically powerful "direct" representations of reality, must entail considerable acts of cognitive "juggling". As one senior researcher in relation to the modeling of oil exploration once noted: "Sometimes we are caught by the vividness of our own constructed models. We can blow too much life into them. Then reality can hit us back hard."

An example of how the "internal rent" focus effects project life, is that projects are assessed in advance in light of its potential to return profits, of the level of the "internal rent". As one project manager once noted, half jokingly: "With the internal rent requirements these days, it is a question of whether we can do much more projects in the future." Some considers the requirements so high that most projects never can be able to reach the target, and thus are not realized. The internal rent is in this way a decisive guiding tool in which goals to find, choose and realize. Indeed, during my years of fieldwork Hydro had a major strategic shift of focus from downstream projects to upstream and midstream, the latter exemplified by the Qatalum project.

It was explicitly stated from corporate management in 2005 that new investments would mostly be directed towards upstream/midstream activities. And the main reason is the difference in profitability in their downstream versus mid/upstream activities. The latter has in recent years had a much higher profitability. Nevertheless, the majority of work places are found downstream. At Hydro's Capital Markets Day in 2006 Eivind Reiten was asked by one of their American investment banking shareholders why they did not sell the downstream businesses. Reiten later explained in a research interview, however, that he found the finance community also to be concerned with the long-term view, as long as they were given rational reasons for it. In a Hydro intranet "Netcafé" the head of Hydro Aluminium at the time was asked about the recent strategic shift towards up/midstream activities:

> "… Hydro Aluminium and the other large integrated aluminium companies are all struggling in achieving sufficient returns. Therefore, in our strategic process this year we had to evaluate different portfolio alternatives like should we still be an integrated company, should we be a more upstream focused company, should we have more downstream focus, our future cash flow and the financial requirements for the different strategic directions. As you have already seen, our choice was to remain an integrated company but with more resources allocated to the upstream area in order to win the comprehensive restructuring that will take place in the industry. We will continue to capitalize on the unique position midstream and work to improve profitability and cash flow downstream. In order to justify this kind of portfolio, we need to create more value across the sectors than each and everyone would be able to do on their own" (Netcafé September 22, 2005).

When talking to project managers, plant managers, corporate managers and line managers in Hydro, I found myself often discussing different types of financial instruments of control. These are concepts with tantalizing short abbreviations, like CROGI, EBIDTA and RoaCE. "We struggled the first years, but last year we met the CROGI by quite a margin", said Peter, one of the GM's in Xi'an. We were sitting in the hotel lobby one evening and the head of magnesium was also there for a short visit. He skipped in: "We call it 'CROGI-ism', everybody is talking about it these days. Even in Bécancour, a plant that is repaid and makes millions every year". Peter followed the lead, and said:

> "Here we are making just small money compared to Bécancour, but because our CROGI is good we get positive feedback from "the management" ["ledelsen"] while Bécancour gets the heat because they struggle with their CROGI. As you know, the Bécancour project exceeded the budget with more than one billion NOK, and was troubled by a host of unforeseen issues. Because of that, their CROGI will never be satisfactory. The plant operation, however, is excellent now, so the whole thing is very much unfair in my view."

CROGI is an especially interesting abbreviation in relation to Hydro and investment projects because it is an in-house invention. CROGI means "cash return on gross investments" and was developed prior to the strategy process Hydro ran in 1999 called

"Focus for the Future", and was introduced along with EBIDTA[90] in the organization in year 2000 (Lie 2005: 429). At the same time as these two measures of return on capital were introduced, Hydro terminated the ordinary operations budgeting, were the expected revenues, costs ans results were presented. A problem with these older budgets was that they were not well suited to follow up the results in the various business units, and thus did not give a picture of the performance of the different operations. The most important performance measure thus became the CROGI, an indicator of the relationship between cash flow and investments.[91]

It seemed on the surface of things often like these terms were a completely natural part of the corporate life, like it had an eternal flavor to it, a self-evident status and legitimation. And not only that, it seemed to be very, very important. That is not to say that many managers in Hydro not were constantly asking questions about the reasons they were so much monitored and measured on the basis of these in many circumstances incomprehensible terms. Often the more engineering minded managers, meaning those with the major part of their educational background and experience as engineers, a considerable skepticism was voiced towards these instruments as major tools for steering projects and the operations of a company. As these instruments have been developed by the accounting disciplines this skepticism should not come as a surprise. However, while the interpretation and judgments of these instruments were highly heterogeneous throughout the different manager groups, and individually different across both functions and educational backgrounds, there seems to be a shared understanding of the necessity of some form of financial control throughout the company, as far as I have been able to observe.

CROGI was discontinued in 2004 and RoaCE ("return on average capital employed") continued as the major performance measure. Officially this change was made due to the demerger of Hydro's fertilizer operations. Agri was established as a

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[90] EBIDTA is "earnings before interest, tax, depreciation and amortization".
[91] See the Hydro annual report for their definitions and usages of the various finance control terms:http://www.hydro.com/no/investor_relations/financial_rep/2003_annual_report/other_results.html

separate company listed on the stock exchange from 2004, and subsequently more of Hydro's total revenues came from oil and energy. And in the oil business RoaCE is the most commonly used measure. After Hydro continued as a dedicated aluminium company, their oil and energy operations merged with Statoil in 2007, so what will happen with the financial measures of performance and control in the "new Hydro" aluminium corporation is too early to tell.

The recent introduction of finance control measures in Hydro is part of a global trend the last 30 years or so, especially generated by the Anglo-American corporate tradition, which in an increasing fashion has introduced "…batteries of sophisticated financial indicators and controls" (Armstrong 1987: 416). In a self-reinforcing cycle, accountants have been increasingly occupying managerial positions, and this has in turn enabled a shift from "production" to "financial" controls. It has "…increased the salience of financial as against other forms of control and extended financial controls deeper into the organization in the direction of the labor process itself" (ibid.). This is a significant reading of an aspect of the wider context of the idioms of the name and of the practices of the CVP process in Hydro. As we saw in the DG4 ritual, the finance "Controller" as well as other economic and financial managers played key roles, while the critical measure for the development of the whole project was the numerical representation of the projected "internal rent". The CVP thus embeds "capital value" concerns and controls directly into the mostly technically oriented engineering process of creating projects for future production.

As a corollary to the more thorough discussions of the practices and premises of managerial authority earlier, it might here be argued that when authority appears fragile or fails, managers frequently employs a second dimension of power. Zuboff call this dimension "technique", the material aspect of power (1988: 313). While authority to a large extent is linked with, and based upon, a spiritual, sacred, or "transcendent" reference of faith beyond the authorities themselves, "technique" concerns the concrete practices that can shape and control behavior. "Techniques of control, are used for monitoring, surveillance, detection, and record keeping" (ibid.). They can be a comfort

to those in power, but simultaneously reveal a crisis of confidence in the system of belief that under circumstances of legitimate authority ought to constrain behavior. This perspective on the rise of mechanisms of finance control should be kept in mind. Legitimate authority and techniques of control could possibly be seen as co-originating the spaces and conceptions of power under "reflexive modernity" (cf. Beck et al. 1994).

Indeed, this recent turn to financial control was in Hydro part of a comprehensive and concerted effort of a wider financial (re)orientation throughout the whole of the company since 1999. By way of anticipation, before turning to the wider efforts and consequences of this quite radical turn to finance, let us through an empirical snapshot of how a group of project managing engineers from their point of view described the situation of the increasing power of what they called "the economists".

"Blåruss"-blues

I am heading for the evening dinner together with three engineers from Hydro Projects. It is almost Christmas and a cold evening in Suzhou. As always, the discussion roams about where and what to dine. No one in the company speaks any Chinese. In their forties and fifties, Roger, Jonas and Gard are all very much experienced project engineers, specialists and managers. Roger is very conservative and cautious about what he eats, due to health problems, and every time someone suggests one of the plentiful restaurants along the road he insists that we move on. After a while, as frustration builds up, we realize he is heading towards a known restaurant. "The one with the yellow chairs." It was number 262.

Gard, the specialist with sometimes 250 travel days a year, over 100 times across the Atlantic, his own excavator-in-the-garden-kind-of-guy, exclaims calmly, always calmly, and with a steadfast, humorous keen eye fixed upon you, indicating some double meaning or another; "we have been here three days in a row now..." He looks around, smiling at everybody. "Yes", replies Roger, "that's exactly why we're heading there. We know what we eat, they even have a guy speaking some English.

Remember last time we improvised?" He shakes his head, the other two chuckles, and some prudent hints about the implications for his podagra surfaces. "Yes, yes", says Jonas, "but today I have a note with Chinese signs explaining what we want to eat. Lin made it for me." Jonas, the incarnation of the stereotypical Norwegian man "from the woods and mountains", always with his skiing-cap on, walking incessantly in high speed, is very pleased with the note. Roger, however, does not give in; "the note is based upon *this* very restaurant! What makes you think you can get the same food at another place". It is not a question. You do not negotiate with podagra. We enter the restaurant with the yellow chairs. During ordering of the meal, Lin had to be called on the mobile phone, nevertheless.

Already at the sidewalk, before entering, discussions of project life alternated with the dining decisions dialogue. "There is too little recognition for project work in Hydro", said Jonas. "The decision makers are "blåruss"[92] who knows nothing about value creation. There is really some arrogance upwards in the system. There are soon only economists left among top management." Gard skipped in: "All the contemporary focus upon separate business units kills new ideas and long-term vision. You see, before the engineering people were part of staff, the "engineering department". We sat in white science coats, felt slippers, with erasers and pairs of compasses and enjoyed ourselves. So you see, today we are missionaries." Jonas laughed and remarked dryly: "The white coats I remember, but not the felt slippers." Gard continued: "Today it is the impression that project people "are so expensive". Our jobs are almost on "tender", that is the situation today. Internal hourly invoicing is brewing in the background regarding every activity you are carrying out."

Gard was hitting it hard now, but as always embedded with huge doses of humor.

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[92] "Blåruss" is a Norwegian native concept literally meaning the last year student at a college for commerce or finance. In Norwegian it signifies a range of connotations, partly dependant upon the context of use. In the present situation Gard implies a derogatory meaning of "yuppies" without experience, expertise or knowledge of the "real issues" related to industrial value creation.

> "The path we are now taking is the economists death march towards becoming a trading company. As Jonas said, they don't know value creation, views technology as something you are burdened with, thinks that everything can be bought, that a factory can be set up in a day. These guys don't build anything. Right? You can buy a factory at the grocery store. Yes?"

Later, in an accidental meeting in the garage at the corporate headquarters Gard vividly illustrated this point. With a seriousness, that almost made his statement comically to the absurd, he said insistently: "You have to take into account that these people [alluding to both to "top management" and "the economists"] do not build anything themselves. They don't fix anything themselves. I mean, these guys do not even build their own outdoor lavatory at their mountain cabin!" Presumably responding to my big smile and internal voice noting my own lack of lavatory construction capabilities, he gave a chuckle. Then seriously again: "It is their everyday experience to buy everything. Remember that."

At the restaurant with the yellow chairs in Suzhou, with reference to the liberalization of the power market and the struggles with "competitive" power prizes for the industry in relation to the consumer market, Gard further contends:

> "Comparing power prizes for industry and consumers is just nonsense, because the latter does not account for the cost of the net. You gain on the swings and lose on the roundabouts. The "blåruss", when disguised as regulators, live with the belief that you get the same societal value from power when used for your bathroom heating cables as when used in aluminium production! Reiten, I am sure, he wants to create something, but there is no will to create value in Norway – only distribution. There is no political will."

Jonas skips in. "There is little new recruitment in Hydro, we are moving towards a trading company, and towards no onshore industry in Norway. It doesn't matter at all what the engineers are saying, they can talk as much as they want…" Gard humourously adds: "We have to learn from the French truckdrivers, to just block the road."

The discussion picks up again once seated, and the cracking of jokes and brief anxieties regarding ordering has settled. “You know”, says Gard:

> “The competencies are diluted upwards in our system. We have to teach them over and over again, ten generations. The “blåruss” are not aware that it takes at least ten years to build project competencies. I have to teach new people casting economy all the time. They have to learn it from top to bottom and up again, otherwise it just becomes nonsense. But at the next moment these people move quickly out the door. There is no status for the “blåruss” in doing this.”

Jonas joins in again. “The recruitment of decision makers is done through a process of inbreeding, but then again, project people would not enjoy themselves in a staff function”. Roger doesn’t say too much, he is busy evaluating the food. The chopsticks are not the most practical of tools either, according to him. A small army of young female waitresses dressed up in orange uniforms is continuously at our service. After ending the meal, while settling the bill, and indifferent both to local customs and local prizes, each person had to put exactly the money for what they themselves had eaten on the table to aggregate the total sum. “Otherwise”, as Gard explained, “it just creates an economic mess when reclaiming the money back home”.

The CVP process, owned by Hydro Projects, was however they felt about “the economists”, defended by the engineers. As Gard at one juncture pointed out: “The CVP is in fact very educational [“oppdragende”] for the economists. It builds shared understandings of the project between the owner and the project. It secures involvement, or highlights lack of it, from the owner side. For example, when the corporate management board terminated the project for a new casthouse in China as late as at DG4, I think it was due to lack of involvement from the owner side earlier in the process.” Gard’s assessment of the casthouse project termination was later confirmed to me by Reiten. He noted that the corporate management [“ledelsen”] got acquainted with the project too late, and when finally reviewed found it unsustainable.

Gard saw the process surrounding the casthouse-project, and its late termination, as a consequence of the project being “market driven” and thus bound by customer

contracts. “In such a case, it may happen that many links in the chain are superseded because things have to move fast. Involvement [from the top] is then often lacking.” “Also,” added Gard, seemingly in want to balance the picture somewhat: “The economists and the lawyers think that postponing a descision does not entail implications. They don’t easily see the consequences of decisions at all. Thus they become a bottleneck in the system. And remember”, he said emphasizing the phrasing, “*not* making a decision is also a decision. And it might very well be the wrong one.”

Jonas later called me up. He had checked the facts. In all fairness, there were still engineers in top management. He had been wrong in stating otherwise.

The theme underlying the discussion among the project engineers is the underpinnings defining different “worldviews” among engineers and economists, as they see it. “The economists” doesn’t recognize that technology is created, that production is complex, that industrial efforts take training, skill, competence and time. That is why the CVP, despite its very strong financial connotations, in the eye of the engineer’s functions “educational for the economists”, as Gard put it. More importantly, they have a strong conviction that various economic activities are *qualitatively* different. You don’t get the same value out power when used for bathroom heating cables as when used for aluminium production. Some economic activities are seen as more valuable to society than others. This is the same argument as those made by “the other canon” economists (cf. Reinert 2007; chapter one), and an insight they argue is lost in contemporary mainstream economic theory and policies guided by it.

The engineers are also alluding, wittingly or not, to the perennially significant relationship, sometimes symbiotic, sometimes parasitic, between production and financial capital. In the context of Hydro, the engineers sometimes refer to “finance” pejoratively as “økonomene”, “the economists”. This because they epitomize the idea of taking production capabilities for granted, “bying them at the grocery store”. The “economists” concern in their view is to maximize return on already given production capabilities at any given point in time. This logic is also illustrated by the “internal rent”

we saw was projected up and down varying with various incidents and forecasts in the "Descision Gate four".

The engineering managers are worried that Hydro turns into "a trading company", into a financial corporation. As noted by for instance economist Michael Hudson[93], the industrial worldview, in contrast to the financial, emphasizes economic potential and how to best finance a higher economic horizon. This has been exemplified by 19th century German, French, Japanese, Scottish and Russion industrial banking as it evolved along a different line than Anglo-Dutch mercantile banking, producing very different financial philosophies. Hydro itself was in its inception and development phases, as we know, financed by Swedish, French and German industrial banking. It was very much born out of that particular "production capitalist" financial tradition (Andersen 2005). As Hudson remarks, the classical way of extending the economic horizon was by providing returns to entrepreneurs for investing savings in building new factories, hiring more labor and undertaking more research and development. Hydro's history could not be a more fitting example for all of the three elements. However, the issues of a "turn to finance" in projects raised above, is part of a larger reorientation within Hydro since 1999, in the name of "value based management", or "shareholder value".

The surge of "shareholder value"

Following the strategy process "Focus for the future" in 1999, guided by the American consultancy company "Boston Consulting Group" (BCG), a wide array of efforts, actions and principles were put in place in Hydro (Lie 2005: 424-433). One major result was the initiation of so-called "value-based management". Value was here to be understood as "shareholder value", that is, return on shareholders invested capital. An analysis of the 10-15 previous years in Hydro by BCG, concluded that shareholder returns had been good until the middle of the 90s, while the following 5-6 years it had

[93] "Capital, capital everywhere – How to invest it wisely?" Report to the Norwegian Shipowners' Association, 2000. Se http://www.michael-hudson.com/speeches/0008norway_1.html (08.15.07).

fallen. Hydro concluded that the return on capital had been to low, and subsequently defined higher shareholder returns as Hydro's overarching goal. A set of measures was launched to reach the goal, both the principles of so-called "value-based management", detailed performance indicators, developing a composite portfolio, and control and incentive systems. Under the heading "Value based management" and accompanying a figure on the Hydro web site reads the following:[94] "Value creation is the basis of all our processes. Key elements of this philosophy are:

"* Prioritization of investment funds:
- to ensure better correspondences between allocation of resources and strategy

* Tightening of capital expenditure discipline:
- to focus on supporting strategic potential within business units

* Introduction of value based management tools:
- to measure results in terms of profitability and capital input throughout the organization, and increase understanding of how value is created

* Introduction of performance related pay systems at all levels of the company in the near future will further encourage creation of value."

A key question of what this entailed was if other interests, like growth, creating work places, contributing to society, in short other "stakeholders" interests, were sidestepped by the new focus. The board of directors concluded that it didn't. The level of understanding of the issues at stake by the BCG consultants was vividly illustrated when they explained that this was not a problem because it was the shareholders who

[94] See http://www.hydro.com/en/investor_relations/analytical_info/value_based/index.html (September 11, 2007).

got their compensation last; after employees, suppliers, banks and the state. As Lie notes:

> "The question of how production results is to be distributed among labor and capital, presented as a Gordian knot in economic theory at least since Adam Smith and David Ricardo, was apparently solved just by saying "value based management" and point to the trivial fact that the dividend is disbursed after wages and taxes" (ibid.: 426, *my trans*.).

Lie further contends that the consequences of the new shareholder value orientation should not be overemphasized. Nevertheless, at the same time as turning to financial forms of control, most of the top management changed, some by old age, but also because the new CEO from 2001, Eivind Reiten, meant that larger changes had to be effectuated to introduce a more performance-oriented culture in Hydro. For example, a new Director for "management and culture" was hired. Alexandra Bech Gjørv reoriented Hydro's "culture-building" project, from being directed towards creating shared understandings between employees and management, to creating shared conceptions between top management and return-on-capital demanding shareholders; the latter as represented by a dispersed investor and analyst community.

A performance oriented personnel policy was also implemented, with the introduction of "key performance indicators", result based compensation was implemented for both management and employees, and an options programs for the higher echelons of management was installed from 1999 and expanded in several later waves (see chapter eight). An illustration of the cultural premises pertaining to indicators and performance oriented ratings, are two entries from the diary of Hydro expatriate manager Herman in China. On February 26, 2005, he wrote some passages about evaluations the members of plant management team gave to each other:

> "During last week we had some discussion about the appraisal ratings. I found that we in Europe normally take a much softer approach if we have to evaluate people's attitude, behavior etc. I personally give a rating [of others] between 1 (worst) and 5 (outstanding) as the lowest rating "3". When I saw later the ratings of my managers of their direct reports there was a significant difference. 2, 3 and 4 was a widespread rating. I brought this up because I thought that if you give too low scores people are rather

unmotivated than encouraged. No. The Chinese found that this shows people a nice gap where they can improve."

On March 5, 2005, the next entry in the diary, Herman further reflects about issues related to performance targets and cultural values:

> "Last week I had to complete some HR documents, the so-called Hydro Leadership Development Program. In this program we have to talk about the five Hydro values, and also set the targets for the managers for the current year. During that exercise about the performance targets we had some interesting discussions. I felt since long time that people want to set their own targets. This is easy for a running operation, but very difficult for a start up enterprise as we are. At the moment we have a lot of preparation work, 1000 of small jobs to be carried out depending of the progress of 1000 of other things. I told the people some month ago that I want everybody to concentrate on what he is responsible for, think through the future operations step by step and make sure that no white [blind] spots remain. Every week on Monday at 13:30 we meet and talk about issues and progress. But nevertheless, often the performance targets came on the table, but I did not react. During one the HLDP we had a bit more time to talk and we had also to set the targets. Before I asked for my direct reports, to think about their targets and to find out for themselves what would be their three success stories at the end of the year. The answers coming back were really not of thorough thinking. This triggered a discussion were people explained to me that in their culture, over a long period, they have always been told what to do. And if the commander does not say anything, this may lead to confusion. Even young people with University degrees feel that they are executers and the objectives come from the top. Of course they understand that own target setting is a better identification, but the targets have to come from the top. If they get their targets from me, they will roll them out in the organization, break down into sector and personal targets and make all people work for the targets. This was an interesting learning for me. Because in our culture the own targets are far more important, even though they are extracted from the company targets, but it make us feel more comfortable and give a higher level of identification. Maybe another discussion I had with a young foreign student about the orientation of the society has some relation to the story above. She told me that she finds the Chinese society is now without orientation, due to the fact that there is a strong stream of capitalism with freedom in every respect, high level of service and private consume of luxury goods, and a lot of money evolved, within the frame of communism, very poor people and restricted human rights and corrupt legal framework. It seems that the society is in the middle

> of a "paradigm" change where values of the past become less modern, but the new modern values are for a restricted number of people only."

In continuation of the new "finance control" oriented policies, employees were also given the opportunity to buy their company stocks at a discount. The whole system was designed to support the principles of "value based management" and weave top management and shareholders' values and goals tighter (ibid.). Out of a wish to appear shareholder oriented, already in 1995 had Hydro began to hold special "capital markets days". They did not want to give the impression of being (half) "state-owned", and became attentive towards signals from the investor communities. A brand new design and structure of the www.hydro.com website was launched in 2002/2003. An interesting aspect of this was that a new main menu was introduced, which was labelled "Investor relations", through which you get all of the major information and details about the Hydro business, including their annual reports.

An early indication of the new CEO Reiten's ambitions in the direction of a financial reorientation was signaled in his new program slogan for Hydro: "People, performance, portifolio". As we have seen, both the two first P's had major, but indirectly and complex, "turn to finance" implications. The latter symbolized the turn directly. The concept of "portifolio management" signals a shift away from top management being experts in key aspects of the business, to managers as "generalists" viewing the company and its sub-units as "liquid assets" that could be managed as a financial investment portfolio. As Crotty (2005) notes, this development was part of the "conglomerate" surge from the 1960s onwards, picking up speed in the "takeover" movement of the 1980s, but not until the 1990s was the financial or portifolio view forced upon the managers of the non-financial corporations.

"Faglige ledelse", collaboration and democratization

The Hydro case illustrates the ambivalences of this development. While several other of the large companies in Norway, like Statoil, definitively adopted the "manager as

generalist" notion, Hydro continues to the present day with a strong focus upon top managers as experts in the business and operations of the company. The "native" term for this kind of management in Hydro is "faglig ledelse". Discussing the role of experts and specialists in relation to top management in Hydro, Geir, one highly experienced project director noted:

> "I would say so. In reality, yes. The top management is very concerned to be informed about what the experts say. And not only because they think it is "nice", that is. When we approached concept selection in the Ormen Lange project, three days prior to deciding upon the partnership, Hydro also arranged the, what is it called... "finansdag" [capital markets day]. Reiten wanted to tell them something about the project, so he called me the prior day. He asked me, "Geir, do you have the flow assurance under control"? He asked that, [pausing], so he knew it was the last thing left [in the project before the selection of the concept could be made]. I told him "yes", he said "great", and chose the concept. I think it says something about him as well; engagement, participation, understanding, and the form of communication we had throughout. Excellent accordance between the expectations and ideas about what we were supposed to be doing…"

Reiten himself elaborated upon this theme from his perspective in an interview with him in his office.

> "I am immensely conscious about it ["faglig ledelse"; to be professionally informed and on top of business activities]. Therefore I work an incredible number of hours a day, and I work those hours to continually be professionally up to date with what we are doing. I believe that my authority, and not only mine, but the whole of top management, but also my authority as a leader here is dependant upon the organization realizing that "he knows this"; that they recognize that when they join a meeting in the corporate management board they will be challenged by someone who knows what he is talking about, someone who has read and worked himself through it [the material]. If I was seen in a way as "surfing" on my title, only walking in and out of black cars, surrounded by security guards, and all of this fuss that is a part of it ["alt dette styret som følger med"], that day you are definitely finished here. You have to go in, embed yourself in the matters ["være i materien"]. This adds a lot of working hours to my day, because you need to command a huge area. It is enormous value creating potential in that of challenging the organization, so that when they exit the meeting they think; "he was knowledgeable, not what we had expected on this level, we thought maybe…" At the same time you need to focus on the

> big picture. It ["faglig ledelse"] doesn't work perfectly everywhere, but as our main philosophy, yes. Our organization is allergic to such things [as the Kenning philosophy of the generalist manger who without specific domain knowledge can "manage" everything]. It is absolutely no room for such things in Hydro. They are allergic to "strange notions" ["påfunn"], as I call it; trends, fancy ideas, all kinds of mess and buzz ["surr og ball"]. You can positively be resilient, but you have to be sober, serious, keep your feet on the ground, know what you are talking about. In Hydro words weigh no more than the quality of them. They carry no more weight because the sender has some title. It is not possible, I'll tell you, to throw around various "leadership slogans" in this organization. It will not be well received ["det bare faller igjennom"]. The organization is deeply sober and serious ["grunn-nøktern"]."

In their focus on "faglig ledelse", as "expert management" or "knowledgeable management", we also notice Hydro's legacy to the original emergence of the subsequently globally "triumphant" managerial rationality, as it developed from the American engineering tradition in the period 1980-1932. As noted by Shenhav: "The American scientific justification of management practices and ideas sets it apart from European countries where more importance was attached to religious, nationalistic, and culture-specific ideas determining human relations at the workplace" (1999: 5). Thus, while the logic of the "managerial vision" was disseminated worldwide, it had very different local justifications. As has been shown, particularities of both the "Norwegian model" and of the German engineering tradition have also shaped managerialism in Hydro (see below, and also chapter two and eight).

In a certain respect the Norwegian model also resemble the British. Here debates about management were dressed more in moral and ideological terms than the "mere" scientific, and thus neutral and non-ideological productivity discourse in the US. In Britain like in Norway the main arguments for introducing the Human Relations programs was the ideology of enhancing democracy at the workplace. The major collaborative effort of introducing these programs, from the researcher side, was a joint British-Norwegian team (Emery and Thorsrud 1976). A key concern of the project in Norway was to link Human relations more directly to production and the "core of the

issues", which the researchers felt had not been done in Britain (Johannessen, Rønning and Sandvik 2005: 308).

We might also note that the major program, the "Norwegian Industrial Democracy Program" from 1962, seems to have been much more successfully implemented in Norway (Thorsrud and Emery 1970; Emery and Thorsrud 1976). A national strategy for the "humanization of work" was an outcome of these initiatives. It led to the idiosyncratic "Norwegian model" of work life relations; manifested both at the macro-level as major agreements on collaboration between the key work life organization parties, and at the micro-level as particular collaborative, democratized ways of working in each company (cf. Hernes 2007). The program had three main phases; first, creating improved representative systems of joint consultation, involving creating worked directors; second, it progressed to workplace democracy with employees gaining the authority, resources and power to change their own work organization and when and where it was appropriate; third, this led to four major experiments on work reorganization in Norwegian industry.

The national strategy emerging out of the program incorporated a part in the Norwegian law on working conditions which gave workers the right to demand jobs conforming to certain socio-technical and psychological principles and requirements of work practice, like: variety of work, learning opportunities, own decision making power, organizational support, social recognition, and a desirable future. Subsequently emerged a program for increasing trade union competence in technology, and implicitly trade union power. A concepts that emerged out of the Norwegian Industrial Democracy Program, in addition to the many issues above, and that later were disseminated world-wide, and quite successfully implemented in Japan, were for example the ideas of "autonomous work groups", or "semi-autonomous work groups" ["selvstyrte grupper"], forerunners of concepts like "self managing" and "self directed work teams" (cf. Mumford 1997). Importantly, when these notions were exported out of Norway, for example to Sweden and other places, the core democratization and humanization values were to a large extent lost. In the discourse of management, Emery and Thorsrud

interestingly discussed the possibility of a shift in the function of management, from internal coordination and control to regulation of the company's "boundary conditions".

Of noticeable relevance here is, of course, that Hydro was arguably the most important Norwegian company participating in the program. In light of both the Norwegian case and my own empirical material from China, it is highly problematic when Shenhav, as arguably presenting one of the most "differentiated" and "non-reified" histories of the "managerial revolution", proposes that the managerial techniques may now be similar or identical globally, and that it was only in its inception they were substantially different and culture bound (1999: 6).

Although it is arguably difficult to deny a globalizing homogenization of managerialism, like possible others the Norwegian case stands out and, not the least, the Chinese local managers in my cases had quite uniform perceptions of the radical difference of managerial styles of the international companies localizing in China. Typically they differentiated between American, German, Japanese, Korean, Taiwanese and Scandinavian companies. And their interaction with companies from these various countries was marked by different anticipations as to what they could expect from the companies.

As covered in chapter five, one of the main reasons managers, and to the extent I have direct and indirect knowledge, also other employees, wanted to work for Hydro was their "soft", participative managerial style, low hierarchies with much delegation of responsibility. To sustain an idea of a globally uniform managerialism is thus difficult. In the Hydro case, democratization, most vividly illustrated in the Xi'an case, is still a strong "eigenvalue" ["egenverdi"], alongside productivity considerations. In the unique cross-cultural encounters happening in investment projects, new cultural forms, also related to managing, are created. In Xi'an we saw how a hybrid type of a Hydro/Norwegian/local style of "democratized" workplace plant emerged in just a few years.

Projects as cultural idiom

Nevertheless, and despite these significant historical trajectories, the shareholder value focus in Hydro was reaffirmed by the very thorough "brand process" conducted with the aid of "siegelgale" consultancy in 2003.[95] Based upon extensive Hydro executive interviews, focus group interviews throughout the global organization, and surveys of Hydro internal audiences, in addition to gathering viewpoints from customers, partners and suppliers, the report concluded that: "Three external forces have conspired to put Hydro at a crossroads, where the company must take a fresh look at how it will create value in the future". One of the external forces was seen as: "*A more demanding shareholder* places pressure on Hydro to emphasize profits first, which calls into question traditional values" [emphasis in original]. Some quotes from the report, which exemplifies this "external force", are the following:

> ""Last year, it was performance and sustainability, today it is people, performance and portfolio. But financial performance remains consistent." *— Aluminium Executive*
> "Hydro's shareholders put pressure on everyone these days, and so we're told we have to live up to that." *— O&E Employee*
> "The shareholder was never mentioned ten years ago. But now it's "shareholder this" and "shareholder that". It's taken a front seat." *—Agri Employee*
> "Our company is being driven by economists. Shareholder value is a textbook phrase." *—Aluminium Employee"*

Lie concludes, however, that the core of the new orientation was rather a much stronger focus upon the *daily operations*, a more thorough follow up of the economic results of the various business units (op. cit.). He writes that from the 70s throughout most of the 90s Hydro was not characterized by such an orientation. Interestingly, from the present investigative approach in Hydro investment projects, is that the company's newer history documents that their capacity to handle large, complex investment projects has been one of their foremost qualities. That is project competence in a wide meaning of the word. As Lie notes: "The company's resources in engineering, research, finance,

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[95] "Clarifying the Potential of the Norsk Hydro Brand", siegelgale report, 2003.

contract design, human resource management has been mobilized on a broad basis [in such projects], along with Hydro's well developed talents for handling authorities and their other surroundings" (ibid.: 434-435, *my trans*.). Following Lie, Hydro's systematic development and maintenance of this competence has been a critical factor for Hydro's generation of wealth and profitability. Hydro's history the last 30 years or so thus indicates a *project-oriented* culture in the widest sense of the word. It has not been an especially "operations oriented" company.

A concrete example of this is that the Head of Projects, Tom Røtjer, from 2007 was assigned the role as Executive Vice President and awarded a place in the corporate management board. From 2007 "Projects" has become one of four divisions in Hydro, on par with Energy, Aluminium Metal, and Aluminium Products. Projects are also frequently sited within Hydro management as a key to Hydro's continuing success. As Reiten said, their inclusion in the corporate management board attests to that. He also attributed the success in project accomplishments in Hydro to a large extent to their use of more resources in the *early phase* of the project lifecycle, and thus highlighted one of the issues emphasized in the present dissertation. Recently, concern with issues related to the early phase of projects has become pronounced also in the project management and performance literature (cf. Kolltveit and Grønhaug 2004; Ericksen and Dyer 2004). Historical records thus deem that a study of investment projects in Hydro may have generalizable value to the company as a whole.

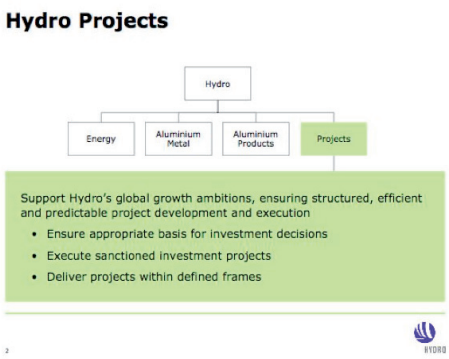

Figure 24. Projects as a top category in the formal organization chart, and a view of Hydro as an experienced and successful project organization (Source: Tom Røtjer, Executive Vice President and Head of Projects, Capital Markets Day, 9 September 2007).

I argue here, and in the following chapter, that the financial turn from 1999 has had other and quite dramatic and unforeseeable consequences, than a mere reorientation towards daily operations, as Lie seems to conclude. As I will show, it has brought consequences pointing also in the quite opposite direction, not only "downward" towards the production of operations, but also "upward" to the "imaginary" and "virtual" realm of abstract "financial wizardry" in the name of what I will call "value origination and appreciation". In the entry of January 29, 2005, in the diary of Herman, the Hydro expatriate manager in China, it is written the following:

> I went to Europe with my wife in beginning of January to attend two meetings. The first one was the so-called "Hydro Summit" in Oslo. During this meeting we were generally aligned for the upcoming challenges. Our CEO wanted to make his point and share the good results and his concerns with the key managers. Hydro has changed recently very much and the former freedom we had in the Extrusion Sector was substituted by a strong top down approach. This opinion is shared across the sector and across people. There were one reflection on that item but Mr. Reiten says he does not believe that Hydro has become more bureaucratic and mentioned a lot of projects that were carried out quickly and with no bureaucracy. It was the most discussed point in the corridors. Another fact is that at the moment it is the finance people ruling the company and the shareholders and the financial community are setting the tone of the music. Customers don't count and very little is said about their satisfaction with Hydro. "Deliver" is the key word, and if you don't deliver, for sure you will get some troubles."

Finance figures and media representations

Some figures convey the financial results that have been produced since the shareholder turn in 1999. A few charts are sufficient to provide an overview. All of them have been presented by Hydro itself. First a look at the development of the Hydro share prize, in

comparison with the two other major integrated aluminium companies, and with the Norwegian oil and energy company Statoil.

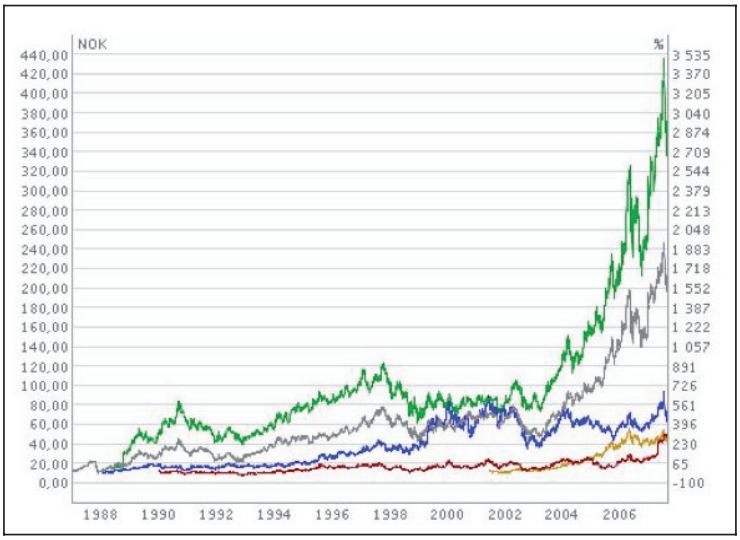

Figure 25. Development of the Hydro share price in the period 1988-2007, as compared with relevant companies. The green line is the Hydro share at NYSE (New York Stock Exchange), the grey line is the Hydro share at the Oslo Stock Exchange, while the blue line is Alcoa, the red line is Alcan and the orange line is Statoil (Source: www.hydro.com. September 1, 2007).

To be able to judge the later years formidable increase in Hydro market value, it is relevant to compare the Hydro stock to the Stock exchange development in the prior period. In the figure below we find that Hydro's share price performance was on par with and even considerably below the average perfomance of the Oslo stock exchange in the decade or so leading up to the "sharehoder turn" in 1999.

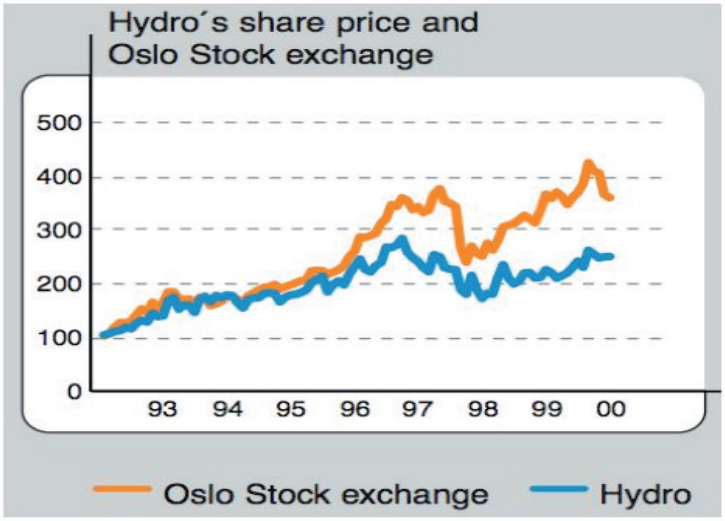

Figure 26. Hydro share development compared to the Oslo Stock exchange in the period 1992-2000. In the six year period from 1994 to 2000 the Hydro share performed worse than the Stock exchange (Source: Hydro Annual Report, 2000).

The next figure shows a comparison between relevant companies of returns to shareholders in 2004 and the period 2000-2004.

Figure 27. A comparison of various companies total returns to shareholders (Source: Goldman Sachs/Hydro).

The next chart illustrates how the dividend made a jump in 1999 (and in 2004) and has increased ever since. Also, it shows how a new strategy of buyback of shares was introduced in 1999.

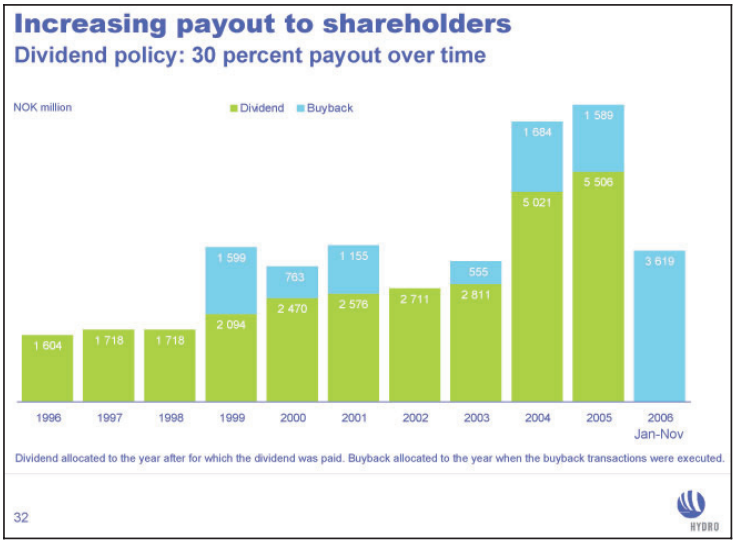

Figure 28. Dividend and buyback of shares since 1996. (Source: Presentation by Eivind Reiten (President and CEO), Capital Markets Day, 2006.

The next chart illustrates some of the same issues, with some different words and emphasis.

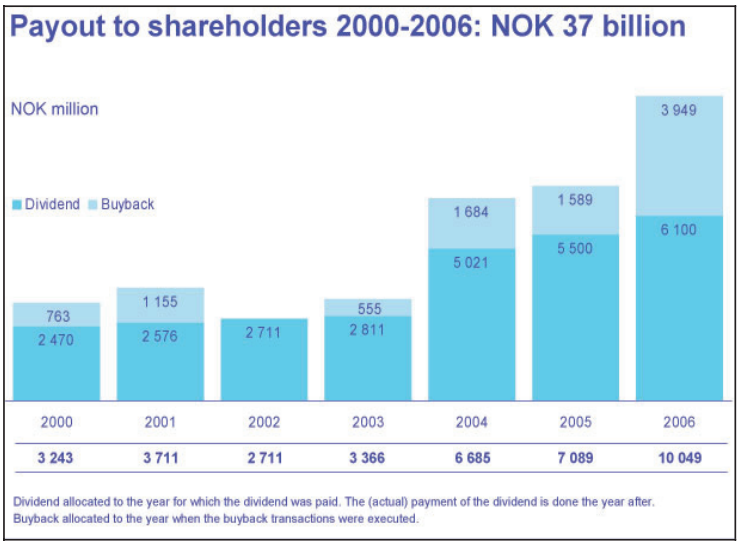

Figure 29. Payout to shareholders 2000-2006. (Source: "Investor Presentation, February 2007". www.hydro.com.)

The next chart shows that the payout to shareholders is "competitive", in the "native language", meaning in effect that it is more or less in the middle, neither high nor low, as compared to relevant international companies.

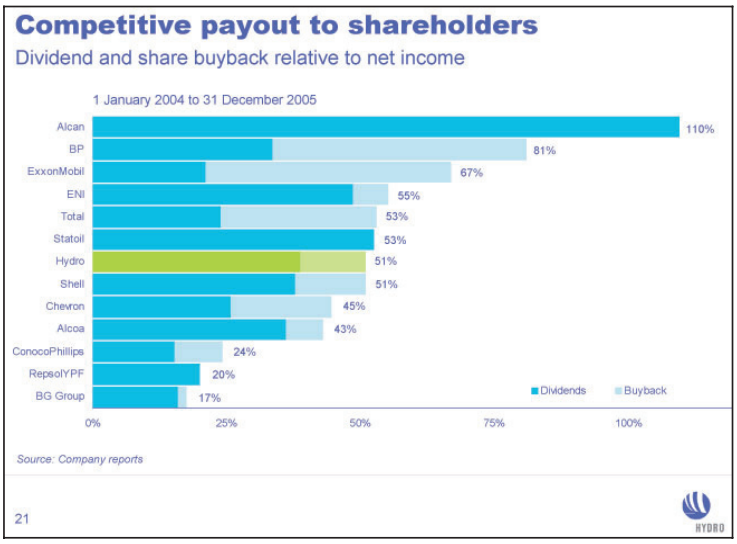

Figure 30. Comparative perspective on Hydro shareholder returns. (Source: Presentation by Eivind Reiten (President and CEO), Capital Markets Day, 2006.)

As stated by President Reiten in the "Letter to shareholders", a communicative genre launched for the first time in 2001, in the Annual report 2004: "Shareholder returns are highly prioritized, and 2004 was a good year".[96] The connection between business success and projects is clearly made when he continues: "For both of our core business areas there are some fundamental prerequisites for success: we must have the foresight to spot good projects early on and the determination to see them through." In his first letter in 2001 Reiten wrote:

> "In my first shareholders' letter, it is natural to underscore my commitment to promoting the company's further growth – by getting the best out of our employees, developing our portfolio and, not least, by improving our own, and our shareholders', results... Active development of our portfolio is a key factor in our effort to create shareholder value. Our three core areas all have a good basis for competitive value creation".[97]

From these figures we might say that Hydro conforms to the overall trends in the global economy described as *neoliberal globalization* or *financialization* (cf. Epstein 2005; chapter eight). As described by Crotty (2005), US non-financial corporations more than doubled their payouts as a share of their cash flow when comparing the 1960s-70s versus the 1980s-90s. Hydro presents its increase in shareholder returns as going hand in hand with a simultaneous improvement in productivity, understood as improved returns on average capital employed (RoaCE).

[96] http://www.hydro.com/en/investor_relations/financial_rep/2004_annual_report/share_letter.html
[97] http://www.hydro.com/en/investor_relations/financial_rep/2001_annual_report/share_letter.html

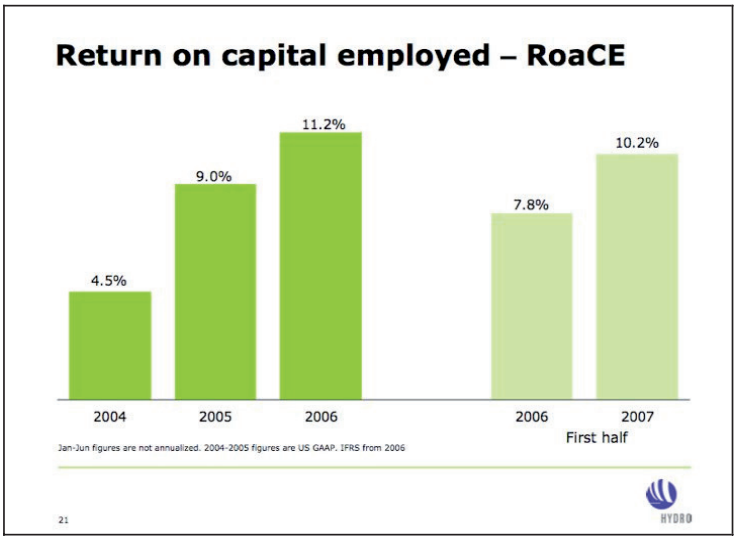

Figure 31. Presentation by John O. Ottestad (Executive Vice President and Chief Financial Officer), Capital Markets Day, June 6, 2007.

These increases are related to the development of the price of the Hydro stock. Below are two presentations of the extraordinary share price development that has occurred since 1999.

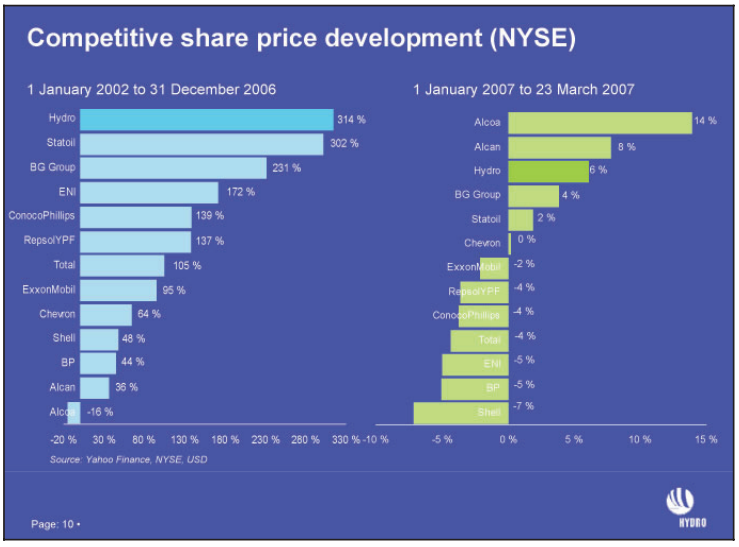

Figure 32. Comparative display of company share price development. (Source: Presentation by John Ottestad, Executive Vice President and Chief Financial Officer, Cheuvreux European Large Cap Conference, Paris, 30 March, 2007. www.hydro.com.)

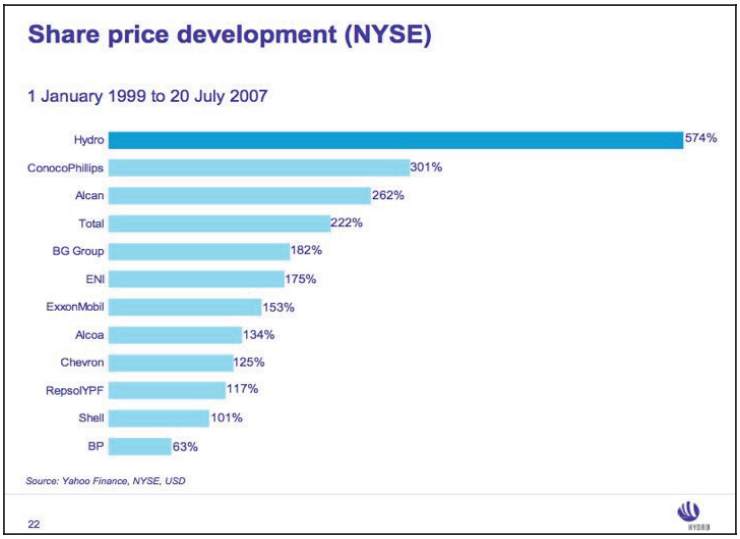

Figure 33. A remarkable share price development in the period from the "shareholder turn" in 1999 until the present (Source: "Investor presentation, July 2007". www.hydro.com).

The dividend policy of 30 percent payout has been relatively stable in the same period, with an increase the last years.

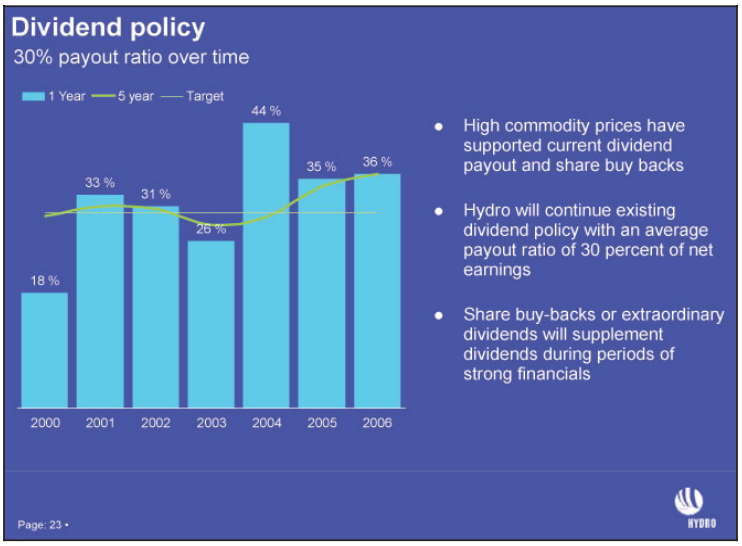

Figure 34. Divided policy of 30 percent payout over time (Source: Presentation by John Ottestad, Executive Vice President and Chief Financial Officer, Cheuvreux European Large Cap Conference, Paris, 30 March, 2007.)

Nevertheless, the actual payout since 2004 has been approximately 50 percent.

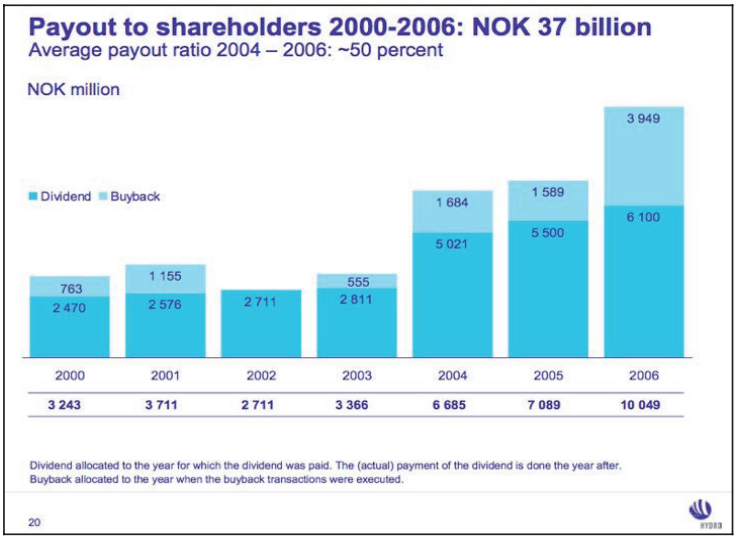

Figure 35. Actual payout to shareholders 2000-2006. In 2004-2006 the average payout ratio has been 50 percent (Source: "Investor presentation, July 2007". www.hydro.com).

Thus we see that the major rise in the stock prize, which mainly has occurred since 2003, is concurrent with the major jump in payout to shareholders and buyback of shares that was realized from 2003 and 2004. Also illustrative is the following chart, showing both the sources and uses of cash since 2002. As we can see, the level of investments has been relatively stable in this period.

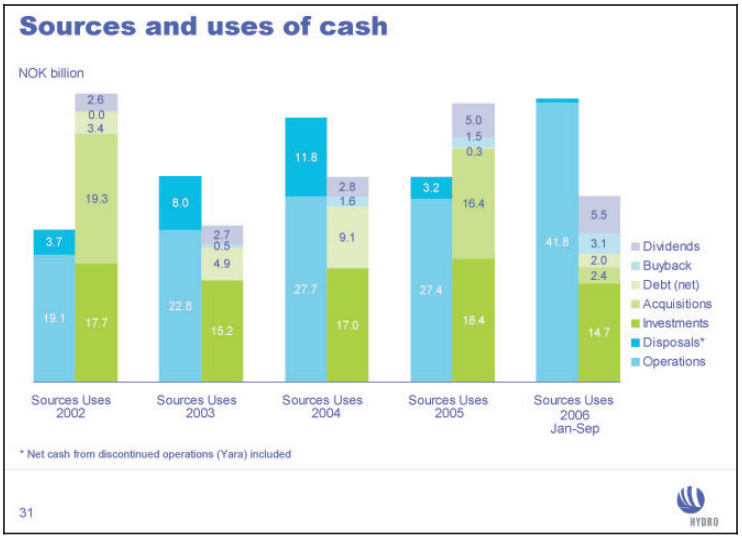

Figure 36. Sources and uses of cash in Hydro 2002-2006 (Source: Presentation by Eivind Reiten (President and CEO), Capital Markets Day, 2006.)

It also seems that the buyback of own shares has become increasingly important in recent years. What are the reasons for buyback of shares? According to managers in Hydro share buybacks is positively evaluated by the investor community, not the least because the value of each share increases somewhat for the shareholders (each share holds a little bit more of the value of Hydro). According to economist Michael

Hudson,[98] "financial engineers" have to a large extent replaced industrial engineers in creating "shareholder value" both through stock options schemes (see chapter eight) and in using cash flows to buy a company's own stock to drive up the stock prize. According to Hudson this latter scheme is euphemized as "wealth creation", while in reality this is only "paper", literally digitized numbers, wealth and not "tangibly real" wealth. Can the buybacks in Hydro be seen in such a light? Alluding to Figure 28 above, with the exception of the year 2002, we see that since 1999, the year when the "shareholder value" paradigm was born, Hydro strategically started buying back large amounts of shares. In 2006 alone it amounted to nearly four billion NOKs in buybacks. As we have seen, in the same period the stock price has been soaring. In fact, it has increased with 462 percent, unmatched by any comparable company (in Figure 33 Hydro arrives at the number 574 percent increase in the period from January 1, 1999, to July 20, 2007). Thus it seems reasonable to conclude that the practice of share buybacks has been at least partly an effort to increase the stock prize and increase the value of the stocks for the shareholders.

A most significant chart in terms of financialization in Hydro is the one presented below. It shows an assessment of the value of Hydro in total since 1999 and up until 2007 when the conglomerate had been split in three separate companies. As noted by Reiten already in his letter to shareholders in 2001, quoted above, he considered developing the portfolio a key issue in terms of value creation.

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[98] Report to the Norwegian Shipowners' Association, 2000. Se http://www.michael-hudson.com/speeches/0008norway_1.html (08.15.07).

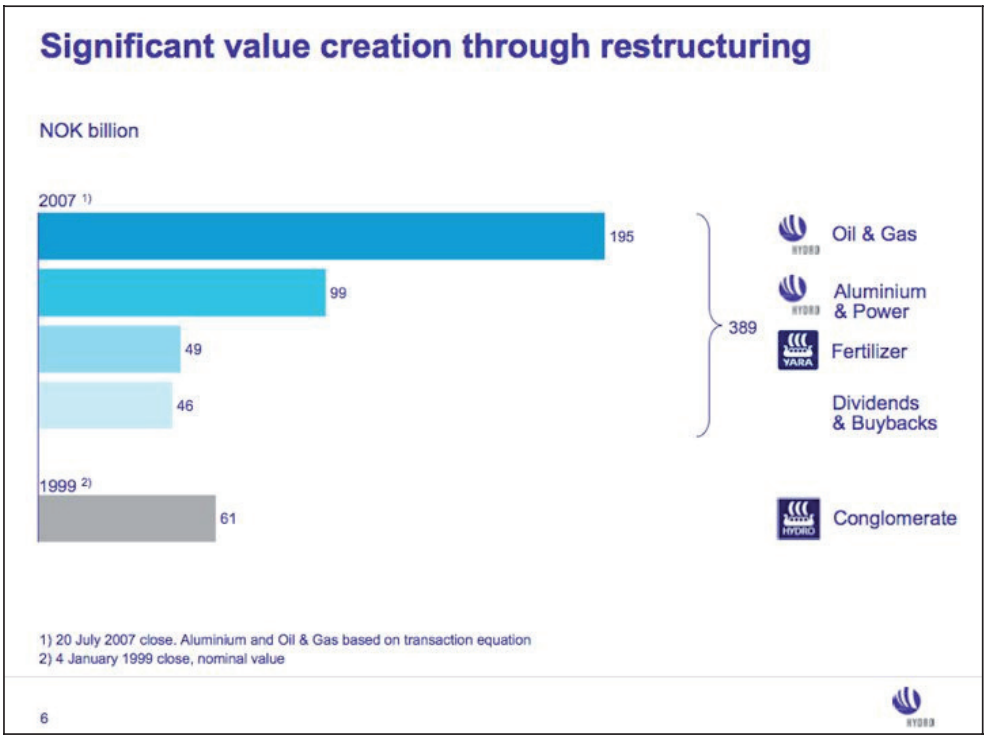

Figure 37. Hydro total value assessment ("market value") development 1999-2007 (Source: "Investor presentation, July 2007", www.hydro.com).

The last figure really emphasizes the extent to which the global turn to financialisation is being conveyed also in an industrial company as Hydro. In eight short years the appreciated value of a hundred years old, solid, robust, conservative company has supposedly risen by 638 percent. These figures seem to be highly in want of an explanation. Can demerging of divisions into separate companies, dismantling a conglomerate, explain the increase? As one financial manager noted, the investor community has been urging Hydro to divest the business areas and focus on separate companies for years, and when it happened it was well received. He also noted that when separated the dominance and high rates of return in the oil business stopped overshadowing the other business areas in terms of managerial focus and investments. Excluding the year 2002 with the 25 billion NOK acquisition of VAW, investments in

the aluminium business from 2001 to 2007 varied between 3,5 and 6,2 billion NOK a year. For 2008 and 2009 (after the demergers) estimated investments in aluminium are 12-13 billion NOK. In average more than a doubling of investments going to aluminium. Thus, it seems it can explain a part of the overall Hydro value increase picture.

Furthermore, can the productivity gains explain the rise? Can the rise in market prices (oil, aluminium, fertilizers) explain it? Although all of these factors certainly play major roles, there seems to be much more too it as well. The extraordinary success of Hydro in its "shareholder turn" cannot be attributed to Hydro alone. Furthermore, the fact that the values at the Oslo Stock Exchange has increased fivefold in the four year period from 2003-2007, the same period as the most dramatic rise in Hydro value appreciation, is less an explanation than a symptom of more fundamental mechanisms at play.

I will argue that these kinds of developments that we have seen in the Hydro shares and value appreciation since 1999 represent an overall development from a focus on production, to a focus on "value creation" and finally to a focus on "value origination and appreciation", which is characteristic of the contemporary "financialised" global economic system (see chapter eight). I will argue that the concept "value creation", like it is embedded in the CVP and management rhetoric in Hydro, is positioned in between productive creation on the one side and financial "value origination and appreciation" on the other side. Practices and talk about "value creation" thus taps into, and feeds from, both the broadly defined "traditions" of "productive capitalism" on the one hand and from "financial capitalism" on the other hand. Viewing the two as poles on an interdependent continuum, we can appreciate that dependant upon context, situation and circumstance the concept of value creation may "slide" towards one pole or the other. A debate from the newspapers could illustrate the point further.

According to the Norwegian business newspaper "Dagens Næringsliv", Reiten received criticism from one of the most ardent industrial conglomerate leaders of

Norway, Jens P. Heyerdahl, during a presentation the latter held. He supposedly commented that with Reiten at the top the only focus of Hydro was the share price, and that it is a difference in building industrial strength and shareholder value. To this Reiten replied in the same edition of the paper:

> "Each and all of the major changes in Hydro the last years has been industrially justified, both the separation of Yara, the fusion with Statoil and the commitment forward as a focused industrial company. That Hydro's industrial development over time also creates major shareholder values is an embarrassment to Jens P. Heyerdahl, I can live quite well with" ["Samtlige store endringer i Hydro de siste årene har hatt en industriell begrunnelse, enten det gjelder utskillelsen av Yara, fusjonen med Statoil eller satsingen videre som et fokusert industriselskap. At det sjenerer Jens P. Heyerdahl at Hydros industrielle utvikling over tid også skaper store aksjonærverdier, lever jeg godt med".][99]

He also described the restructuration of the Hydro conglomerate as an "industrial revolution". When asked by me what he would hope to see as the legacy from his years as President and CEO of Hydro, he emphasized the importance of the restructuring of the portfolio, of the way three strong companies had been created out of the former Hydro conglomerate. Questions that emerges are if the process Reiten has led is most adequately described as an industrial or a financial revolution, or both or none of them?

In the newspaper interview Reiten continued: "It is no doubt that completing such major changes in the diverse Hydro entails melancholy and a couple of seconds afterthought about if it is correct. The one not saying that, is not being honest". ["Det er ikke tvil om at det å gjøre så store endringer i mangfoldige Hydro, innebærer vemod og et par sekunders ettertanke om det er riktig. Den som ikke sier det, er ikke ærlig."] He continued: "But the driving forces are powerful. We had to cultivate each of these huge areas of Hydro…" ["Men drivkreftene er sterke. Vi var nødt til å rendyrke disse store delene av Hydro."] He stressed that today's investors want focused companies to be able to assemble their own portfolio and risk profile independently. Also, he emphasized that the market focus in Hydro has contributed to its continuing success:

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[99] Dagens Næringsliv, June 22, 2007.

"There is a tendency to talk about share prices as if it means nothing. But Hydro has become 102 years because the management always has been concerned with this." ["Det er en tendens til å snakke som om børskurs ikke skulle bety noe. Men Hydro er blitt 102 år fordi ledelsen alltid har vært opptatt av dette."][100]

Hydro has been extraordinarily successful in elevating the value of their stock and in creating "shareholder value" since their "turn to finance" in the late 1990s, particularly since 1999 and especially since 2003. They have received both praise and critique for that. Reiten considers the changes made in recent years an "industrial revolution". The shareholder value approach in general has received considerable critique from organizational and management scholars as well. That corporations exist to maximize shareholders value is a doctrine with to much power, according to some commentators, and argue that today analysts, and institutional stock traders and the media reward and assess companies and their CEOs based on this single standard of performance. They identify through an analysis of statements from a group of chief executives representing America's 200 largest corporations, a shift in their priorities from 1981, were a balanced view of the corporation's and management's justification and responsibilities towards a broad set of stakeholders and societal interests were advocated, to 1997. A report from the roundtable announced that: "The paramount duty of managers and of boards of directors is to the corporation's stockholders. Period. The customer may be "king", and the employee may the corporation's greatest asset (at least in rhetoric), but the shareholder is the bottom line" (Mintzberg, Simons, and Basu 2002: 69).

As we have seen, the "worship" of shareholder value entered Hydro with full force from 1999. If the financial turn has been at the expense of other concerns remains an open question. The Norwegian and Hydro work life model of "democratic capitalism" (Sejersted 1993) may have bolstered and slowed down, and transformed the particularities of, the entrance and the impact of the turn to finance; the latter what I believe Reiten above hints at in the conception of "powerful driving forces". What the

[100] Dagens Næringsliv, June 22, 2007.

changes in Hydro since 1999 illustrates, and which is implied in the hint about the "driving forces", I will interpret first as an indication that the legitimizing idioms of managing authority has been transformed considerably. From being based in engineering and a technocratic rationality (cf. Shenhav 1999) to increasingly being justified in economy and finance.

The invention of "finance control" along a variety of dimensions illustrates this. As will be further elaborated upon in the next chapter, this shift can be seen as a "turn to enchantment". It illustrates a quite radical development in the globalized economy in the direction of "financialization"; a finance economy increasingly decoupled and classificatory "autonomized" from the economic life of people and societies everywhere, and also from the productive activities of key industrial institutions like Hydro. For now, we must recognize that financial mechanisms of control and follow up have been actively socialized into the core practices of production, both in projects and internalized in other aspects of corporate "everyday life" also in Hydro.

To be able to account for the financial turn in Hydro projects and in the Hydro company at large, however, we also need to look beyond Hydro itself. We need to describe some of the wider historical and structural contexts, both nationally and "globally", that provided the impetus for the changes, and which co-produces the "financialized "driving forces" that Hydro to some extent has obeyed in in some senses have thrived under. This is the focus of the next chapter.

Chapter Eight

8. Wagging the Dog: The Financialization of Everything

They wanted something for nothing. I gave them nothing for something.
(J.R. ”Yellow Kid” Weil)

There are only two families in the world, as my mother used to say: the haves and the have-nots.
(Sancho Panza in Don Quixote de la Mancha, Miguel Cervantes)

There should exist among the citizens neither extreme poverty nor again excessive wealth… for both are productive of great evil.
(Plato, fifth century BC. In Human Development Report, UNDP, 2005, Ch. 2)

There's an evenin' haze settlin' over the town
Starlight by the edge of the creek
The buyin' power of the proletariat's gone down
Money's gettin' shallow and weak
(Bob Dylan, Workingman’s Blues #2)

As the former chapter concludes, since the late 1990s Hydro projects and the entire corporation has undergone a shift towards "shareholder value", a shift that I will document illustrates a world wide turn the last 30 years or so of a dramatic financial expansion in the global capitalist system. I indicated that this development might appropriately be labeled a financialized "turn to enchantment", and illustrated this turn by empirically examining changes in Hydro orientation towards "shareholder value" and "value based management" and other "financial" idioms of their managing practices. Broader "driving forces" of this shift, as will be explored in the present chapter, affected and reformed actors in the Anglo-American tradition first, the continental tradition later, and arguably the Nordic and Norwegian economies and organizations even later.

As we saw, the fundamental shift in Hydro can be dated relatively accurately to the year 1999, forged and explicated by their Boston Consulting Group led strategy process "Focus for the Future". It instigated a massive strategic turn in the company towards "shareholder value". Some of the various corporate implications were outlined above. Judged in terms of its ambitions of a real change towards a financial re-orientation, Hydro has been fantastically successful. The stock prize increased its value fivefold and the market value of the company increased sixfold during the period from 1999 to 2007. Top of the league in comparison to relevant companies.

In the present chapter I will try to put this extraordinary financial success into wider perspective(s). I will unfold some of the major contextual circumstances that enveloped the case of financing projects and the financial turn the company took since 1999 along some key dimensions. The turn in terms of projects or corporate culture or knowledge traditions, was by no means developed in a vacuum. Rather it was part and parcel of fundamental transformational processes of the capitalist economy on a planetarian scale. I will argue that Hydro's "turn to finance" is symptomatic of several dramatic new trends since the 1970s in the operations of capitalism both on the domestic or national, and the global scale. I will show that the turn taking place within Hydro was part of; a) an historically recurring phase shift in the capitalist *fourth*

systemic cycle of accumulation (cf. Arrighi 1994); b) the deployment phase of a new techno-economic paradigm (cf. Perez 2002; see Appendix II); c) a political reorientation among the international and national (Norwegian) administrative elite towards market mechanisms and neoliberal ideologies; and finally d), a shift in the globalized inter-state capitalist system of global money creation and management.

This does not imply, far from it, that the particular financial path of the *fin de siècle* taken by Hydro, and on its own terms crowned with formidable success, was in any way determined or inevitable. Rather, I will show how their idiosyncratic trajectory comprises a skilled, "advanced" act of balancing several of the global trends and transformations of vast depth, reach and consequence that has been played out over the last 30 years or so. President and CEO Eivind Reiten himself signified this balancing act, when he, related to the large portfolio restructuring and the subsequent dramatic rise in Hydro "value creation and appreciation", said that; "… the driving forces are powerful. We had to cultivate each of these huge areas of Hydro."[101] At the same time he indicated that Hydro until now has exploited to their advantage these major trends and shifts in the global economy. I will argue that in terms of the recent years fabulous economic results, Hydro might serve as an illustrative example of what Arrighi (1994) has termed a "wonderful moment" in the midst of a deep global crisis in the capitalist system of accumulation.

The analysis will convey that the "wonderful moment" of the millennium, exemplified by the Hydro case, indeed is a reminder of an underlying reality that is more than ripe for ripping open a possible path to a post-capitalist world. However, the eventual characteristics of this possible reality remain open and unidentified. That is to say, more dramatically and in the vein of Arrighi, that the process of breaking up, or down, the configurations of the contemporary capitalist system of accumulation itself possibly has the inherent power of tearing apart the very social fabric upon which contemporary societies are built.

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[101] Dagens Næringsliv, June 22, 2007.

Prior to embarking upon the more general analysis, I will ground the discussion with another empirical example from present day Hydro managing experiences. As mentioned in the previous chapter, one feature of the adoption of the "shareholder value" goal was the implementation of performance related compensation schemes. For top managers this included a stock option program.

The "stock options carnival"

The events of which I here want to describe and analyze were played out in an intense public debate in a short time-span during the summer of 2007. The background was that Hydro in 2000 implemented a stock option based incentive system for top managers. The justification for the scheme was described thus in the Annual report:

> "One of the board's most important areas of responsibility is to ensure that the company's top management meets international standards. Greater demand with respect to competitive compensation and career developments means that the board will have to take greater responsibility for ensuring that the company as a whole continues to develop as an attractive and challenging employer. The implementation of incentive schemes will provide a stimulus for the achievement of the company's goals, as well as contribute to a better understanding of the shareholder's requirement for a satisfactory rate of return" (2000: 32).

Eleven pages later in the same report it is disclosed exactly what kind of incentive schemes the board has in mind: "In line with the strategy concerning increased emphasis on performance and value creation… The scheme consists of share options and an annual bonus linked to the attainment of the business plan" (ibid.: 43). The option programs of the large Norwegian companies received irregular attention and various degrees of public outcries and denunciation in the years after the millennium, and the events of which I will describe in more detail below was preceded by a shorter and a not quite as intense and consequential debate in 2006.

In November that year a heated debate over options in the big partly state-owned companies of Norway was all over the media. In newspapers, on radio and in the debate

programs on TV. A search in the largest Norwegian newspaper article and broadcast media database "Atekst" with the string "opsjoner" ["options"] in the period from November 18, 2001, until November 17, 2006, produced 27617 hits.[102] The main reason for the intense debate in November 2006 was that the CEO of the recently privatized telecom company Telenor had redeemed his options. Hydro was also highly involved in the debate. It reached the highest levels of the government, Prime Minister Stoltenberg was "grilled" in the hour for questions in "Stortinget" (the Parliament), the Minister of Finance and the new Minister for Trade and Industry, appeared on television discussing the issue. The major Norwegian labor union, LO, was also involved, as well as the NHO, the Confederation of Norwegian Enterprise (the main representative body for Norwegian employers). What was the fuzz about? As the representative from LO presented it on television,[103] it was no less than the Norwegian social model that was at stake ["den norske samfunnsmodellen"]. To better understand the background and vast implications adhered to the option incetive schemes in the Norwegian public debate, it is appropriate to describe the even more intense debate about the same issue, that reemerged a bit more than half a year later. This time around Hydro management was fixed in the spotlight.

The options program in Hydro was terminated in 2007, after the implementation of Norwegian laws restricting (partly) state-owned companies in applying such compensation schemes. In conjunction with its closure, the board of directors decided to disburse 210 million NOK to 35 top leaders in Hydro. Reiten alone got 27,8 million NOK. The decision instigated heated debate concerning the legality of the issue in the news media,[104] and the first part of the debate culminated in a statement made by the

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[102] The word "opsjoner" denotes like in English also the meaning "choice", "valg" in Norwegian, and thus the number of hits is an unreliable measure with respect to the financial instrument. However, the use of "opsjoner" in the meaning "choice" is not particularily widespread in everyday talk or in newspaper articles. The string "opsjonsavtale" (something like "option agreement") returned 1547 hits.
[103] "Redaksjon EN", 11.16.06.
[104] E24, 08.27.07 (http://e24.no/naeringsliv/article1907535.ece#AF; http://www.nrk.no/nyheter/okonomi/1.3063808; http://www.nrk.no/nyheter/okonomi/1.3045394; http://e24.no/naeringsliv/article1911028.ece#AF; http://e24.no/boers-og-finans/article1911510.ece#AF).

Ministry of Commerce and Trade that an inquiry of the legality surrounding the disbursement of the options would be initiated. Several of the other big Norwegian owners of Hydro, like Folketrygdfondet, Storebrand and KLP also announced that they would investigate if the board was in its judicial right to end the options program the way it did. Hydro's own lawyers concluded quickly that the board did not expand its authority, they seemed rather to have advised the board not to "shave" the options disbursements due to possible law suits from the affected directors.[105] This advice was also interpreted as somewhat suspect in the media based on the fact that the leader of Hydro's judicial department was himself included in the options program.

The strong reaction from the department seemed, however, somewhat out of hand based on the information that the government had been informed about the options disbursements the previous month,[106] but reacted strongly only after the case broke in the media. Reiten had personally informed the Prime Minister four weeks prior to the media headlines.[107] Some maintain that the information provided was too general and misleading to maintain that the agreements to be terminated were changed in favor of the top management.[108] The Undersecretary Rikke Lind of the Ministry of Trade and Industry was quoted saying: "This is horrible. Reiten has of course not deserved all this money".[109] She continued to say that the huge payout in effect was the exact opposite of what the state had intended by their guidelines for (partly) state owned companies, that led to the termination of the options program. She maintained that these schemes threatened the "Nordic model" comprising societies with small social inequalities.

The leader of Oslo Labor Party and the leaders of SV, a party in the government coalition, among others, demanded that the director of the board had to be removed,[110] and speculations about the end of Reiten as CEO of Hydro, and also stopping of him

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[105] E24, 07.30.07 (http://e24.no/boers-og-finans/article1911510.ece#AF).
[106] E24, 07.31.07 (http://e24.no/boers-og-finans/article1913037.ece#VG).
[107] E24, 08.01.07 (http://e24.no/boers-og-finans/article1914548.ece).
[108] For example former Minister for Labor Party Hallvard Bakke, "Kasinoøkonomi", Klassekampen, 09.21.07.
[109] E24, 07.25.07 (http://e24.no/boers-og-finans/article1903743.ece#AF).
[110] Dagbladet 08.01.07 (http://www.dagbladet.no/nyheter/2007/08/01/507684.html; E24, 07.29.07 (http://e24.no/boers-og-finans/article1910416.ece#AF).

becoming the first director of the board of the merged StatoilHydro energy company emerged.[111] This was one episode in a series of media events that were highly critical of Reiten.[112] The director of the board of Yara, the former Hydro fertilizer division, stated that he would have taken the issue to the general assembly before any such disbursements would have taken place. On the other hand, Yara continued their already existing options contracts.[113] The managers of hedgefunds, on the other hand, feared that Hydro would suffer from "braindrain", that they would loose their "best people", because of the closure of the options program.[114]

Reiten and the corporate board of managers also received some support from the "Senterpartiet", a party in the coalition government. The party's finance-political spokesperson understood the frustrations of the Hydro management, and put the blame for the option story on the Minister of Trade and Industry.[115] The vice-chairman of the party said he knew Reiten to *not* be a man of greed.[116] Reiten himself is a former politician and Minister of Oil and Energy from the "Senterpartiet". The "media storm" was further aggravated by speculations that the board disbursed 46 million NOK more than the options contracts demanded.[117] Intellectuals interpreted the option case as symptomatic of both moral and cultural degeneration and a threat against the Norwegian "societal model" ["samfunnsmodell"]. They labeled the options disbursements as "moral striptease"[118] and "the money that disintegrates Norway".[119] Fuel to the fire was provided by newspapers reporting that Reiten at one point allegedly had called the public debate surrounding manager compensations as "the annual carnival".[120]

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[111] E24, 07.31.07 (http://e24.no/boers-og-finans/article1913043.ece#VG).
[112] E24, 07.31.07 (http://e24.no/naeringsliv/article1911840.ece#VG).
[113] E24, 07.27.07 (http://e24.no/naeringsliv/article1907562.ece#AF).
[114] E24, 07.25.07 (http://e24.no/boers-og-finans/article1903977.ece).
[115] Dagbladet 01.08.07 (http://www.dagbladet.no/nyheter/2007/08/01/507734.html).
[116] Dagbladet 08.02.07 (http://www.dagbladet.no/nyheter/2007/08/02/507822.html).
[117] E24, 07.30.07 (http://e24.no/naeringsliv/article1911027.ece#VG).
[118] Aftenposten 08.01.07 (http://www.aftenposten.no/meninger/debatt/article1914640.ece).
[119] Aftenposten 07.31.07 (http://www.aftenposten.no/meninger/kronikker/article1912570.ece).
[120] See for example Aftenposten 08.04.07 (http://www.aftenposten.no/meninger/debatt/article1920264.ece).

Relevant for the debate was the speculation that five of the *Norwegian* board members were the most critical towards the options disbursements, among those the three employee representatives, while the three foreigners on the board seemed to have been the most positive. The latter three also later chose to discontinue their engagement as members of the board, allegedly because of the way the state intervened in the options case. The director of the board dismissed speculations about dissent in the board and said the final decision was made unanimous.[121] After what the director of the board felt as a "pressure" from the government he resigned his post. He described the process in a strong rhetoric, at least in light of being a member of national corporate elite: "To get a boot behind, for doing a good job, I find surprising" ["å få en fot i ræva for å gjøre en god job synes jeg er overraskende],[122] and he also described it as being "stabbed in the back by the government" ["jeg ble dolket i ryggen av regjeringen"].[123] The Minister contained they had not fired him, but had expressed mistrust on behalf of the state as one of the owners of Hydro. Reiten said he regretted but accepted Reinås decision. The opposition parties, especially Høyre, Venstre and Fremskrittspartiet used the occasion to criticize the government, and the latter stated that it was the minister who should be leaving.

The debate raged on. Subsequently the rest of the board and CEO Reiten's role and position became more pronounced in the debate.[124] The government position seemed to be that if Reiten and the corporate management themselves were responsible for creating the proposal of the 210 million NOK disbursements, Reiten would be sought removed.[125] Before Reinås' resignment the Board had sent its decision-making process to be scrutinized and assessed by the Corporate Assembly to reach a conclusion about trust or mistrust of the Board. Before their decision was made Hydro announced that Reiten and others in the options program renounced in total about 20 million NOK

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[121] E24, 08.03.07 (http://e24.no/boers-og-finans/article1918921.ece#VG).
[122] E24, 08.05.07 (http://e24.no/naeringsliv/article1921795.ece).
[123] Stavanger Aftenblad, 08.05.07 (http://web3.aftenbladet.no/innenriks/article491226.ece).
[124] A condensed news story summary of major parts of the "option case" can be found here: E24, 08.05.07 (http://e24.no/opsjonssaken/).
[125] Aftenposten, 08.06.07 (http://www.aftenposten.no/nyheter/iriks/politikk/article1922429.ece).

of their options compensation. Reiten himself waivered 7.8 million NOK.[126] The Minister of Trade and Industry replied somewhat ambivalent that this seemed to be "enough" and that he would now contribute to establishing order ["ro"] in relation to the Hydro options case. Others in the government commented that it was not enough, and that Reitens position was still threatened.[127] Some commentators ironically noted that in the reduction from 210 to 190 million it was now made clear where the border between the acceptable and the outrageous was to be found.[128]

The Corporate Assembly reached a unanimous conclusion of trust in the way the Board had handled the termination of the options program. However, reports still indicated that elements within the government wanted to remove Reiten.[129] Simultaneously several reports described the substantial stock value increase Hydro had created under Reiten's management. The paper Dagens Næringsliv calculated that in a comparison with their most significant competitors in the aluminium and energy businesses, Hydro under Reiten's reign had outcompeted competitors in the excess of 100 billion NOK.[130] Reiten himself finally broke his silence, and answered the allegations against himself and Hydro, stating that he understood some of the reactions in the public, but strongly disagreed with the strong allegations, "both untrue and malicious" ["usanne og ondskapsfulle"], that had been put forth in the process.[131]

He reacted especially strongly on charges against his properness and organizedness ["ordentlighet og ryddighet"]: "… when it comes to form of procedure ["saksbehandling"], quality in the ways things are done, and role clarity, I have always put my honor in that being well organized ["ordentlig"]". The only thing he regretted was that the General Assembly had not been informed about the decision to terminate the options program in a one-time disbursement. One Hydro historian labeled the Hydro options drama as the largest leadership crisis in the company since 1917. Then Sam

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[126] E24, 08.07.07 (http://e24.no/naeringsliv/article1924303.ece).
[127] E24, 08.08.07 (http://e24.no/opsjonssaken/article1925784.ece).
[128] E.g. Dagens Næringsliv 08.08.07.
[129] Dagbladet, 08.08.07 (http://www.dagbladet.no/nyheter/2007/08/08/508227.html).
[130] Dagens Næringsliv August 7, 2007.
[131] Dagens Næringsliv August 8, 2007.

Eyde, the famous co-founder of Hydro, was forced out of the company by the Wallenberg financial interests, which also in Marcus Wallenberg held the position of the director of the board.[132]

After 16 days of intense mediastorm the debate faded out, and in the "closing phase" the Minister of Oil and Energy stated that Reiten's future second position, as director of the board of StatoilHydro was secure.[133] The Minister of Finance, representing also SV, probably the most critical government party in relation to options and Reiten's position, also dismissed the "possibility" to remove Reiten.[134] The case did not go silent, however, for example did the Oslo Labor Party's board unanimously vote against Reiten becoming the first director of the board in the new StatoilHydro company about a week later.[135]

The government announced that their handling of the options case was the proof of the new red-green governments policies of "active ownership", that had been frequently ridiculed since they launched the slogan. The option theme will certainly be an issue until 2013 when the options contracts in the major partly state owned Norwegian companies are finally phased out. Both Aftenposten and Dagens Næringsliv published huge feature stories summarizing the Hydro options case.[136] Interestingly, Dagens Næringsliv, the daily paper whose editorials and staff commentators had been most positive towards Hydro and most negative towards the government's handling of the case, in their summarizing feature story turned out highly critical of Hydro. It conveyed that the value of the stock options fluctuated widely in just a short timespan. The 13th of June, when the Board of Directors decided to terminate the options program the value of the options was 157 million NOK. The 23rd of July, when the official

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[132] E24, 08.07.07 (http://e24.no/naeringsliv/article1924303.ece).
[133] E24, 08.08.07 (http://e24.no/naeringsliv/article1926874.ece).
[134] Dagbladet 08.09.07 (http://www.dagbladet.no/nyheter/2007/08/09/508397.html).
[135] Klassekampen 08.16.07.
[136] Aftenposten 08.11.07 and Dagens Næringsliv 08.18/19.07. By a stroke of unfortunate coincidence, in terms of Hydro's reputation, the front page of this issue of Dagens Næringsliv featured the tax fraud case of the Ditlev-Simonsen family. It spurred major media attention and featured both Per Ditlev-Simonsen, the Mayor of Oslo, and his daughter, the Executive Vice President and Chief Communications Officer of Hydro. Later both left their offices.

decision of closure was completed by the Board of Directors, the market value had risen to 210 million NOK. The 6th of August, the day of the "crisis meeting" of the Corporate Assembly, the value had fallen to 147 million NOK. At this meeting Reiten "gave back" 20 of the 210 million NOK, and the head of the Corporate Assembly confirmed that this act had been critical to ensure the continuing trust in Reiten as CEO and the board of directors. He further answered "no comment" on the question about if the Corporate Assembly during the meeting knew that the total value of the option compensation package had fallen to 147 million NOK the very day of the meeting. Ten days later the value of the program was down to 127 million NOK.[137] In the purely pecuniary perspective, the Hydro managers benefited maximally.

In a dramatic postscript to the options commotion, at least according to the popular media dramaturgy, Reiten announced rather surprisingly that he resigned from his post as the Chairman of the Board of StatoilHydro only two weeks after he was "inaugurated". The reason was a self judgment of role conflicts in terms of his double position also as CEO of Hydro, at a time when some older Hydro contracts had come under investigation related to possible corruption.

"Options" in a moral economy

What then, can account for the huge amount of attention, debate, consternation and dismay that poured towards Hydro's top management during the options media storm? Contextualizing the debate might enable a better grasp of the underlying themes. One commentator pointed to the obvious paradox that in Norway there are several company owners, most notably Kjell Inge Røkke, that earns many times the money Reiten does, but nevertheless are perceived positively in the public debate.[138] He asked: "'People' hate Reiten, but love Røkke. Why?" Some rudiments of an explanation is suggested in the same commentary. First, people seem to have the impression that Røkke, like some

[137] Dagen Næringsliv 08.18/19.07.
[138] Bjerke, P., "Reiten vs. Røkke". Klassekampen 08.16.07.

others, have earned their money from scratch themselves. The image of the self-made man seems to be well alive also in Norway.

However, other historical cases of similar flavor indicates that this parameter is just one among many, and might very well be overlooked in the public's eyes. Secondly, the commentator suggest that people distinctively divide also the elite into "owners" and "wage earners", were directors like Reiten in a certain sense surprisingly falls within the latter category. Expanding upon this commentary, we might say that the rage against extortionate compensation is perceived as morally legitimate and necessary within the common social categorical sphere of "wage earners". "Owners", on the other hand, seem to be perceived as outside this particular sphere of moral judgment. At a further remove, we may easily appreciate that the owner vs. wage-earner categories and relations reflect the historical relationship between capital and labor as framed in the Norwegian context. This particular context has by notable conservative historian Francis Sejersted been labeled "democratic capitalism", in which a strong state combines with strong communalism and connects with the broadly based petit bourgeois and its ideals of equality and democracy (1993).

Democracy has been a fundamental characterizing value of Norwegian work life relations, as testified and described in chapter two by the Norwegian Industrial Democracy Program (cf. Emery and Thorsrud 1976). A core question has been how the economic domain could enable democratically participatory citizens and a democratic societal development. In this view democracy is the overarching system value of capitalism (Slagstad 2001: 527). Historically "democratic capitalism" has characterized the Norwegian system since the late nineteenth century, until becoming increasingly under pressure the last decades. Variants of this form of capitalism might throughout the world more broadly be applied to the capitalist period of "managed" or "embedded" capitalism, also described as "embedded liberalism" (Harvey 2005), which will be further expanded upon below.

Capitalist owners are in the public debate on options seen as playing another game. It gets really interesting then, in the Hydro options case, that it was the

Norwegian capitalist state, a highly speculative one as well in its millennial financial outlook,[139] as the largest, although minority, owner that found it necessary, after multiple pressures, to act morally against the perceived "wage earner" directors. The moral lesson of this symbolic exchange seems to be that wage earners, in the eyes of the public, as incarnated in this respect by the state and the media and various expert commentators, must display moral decency, defy greed, and "show moderation". The latter a favorite slogan of the NHO (the main representative body for Norwegian employers) to discipline labor in the yearly wage settlements. Without moderation an accelerating wage spiral that is believed to undermine the welfare state is projected as the threat. The Norwegian welfare model rests upon the premise that labor is "modest" in terms of wage demands.

By the options debate we might further infer that the directors of the largest companies of Norway are perceived as belonging to the same social community as labor, as "the common people". As the Prime Minister noted during the debate: "To be a top leader in these types of companies is not all about own income and gains. It is about managing trust on behalf of the whole Norwegian population. Thus being a top leader is a position of trust. This means that such top leaders are constrained by special requirements. That is an issue of prudence and respect" ["Å være toppleder i den type selskaper handler ikke bare om egne inntekter og gevinster. Det handler om å forvalte tillit på vegne av hele det norske folk. Derfor er det å være toppleder et tillitsverv. Det betyr at det må stilles særskilte krav til slike toppledere. Det handler om klokskap og respekt."][140] By using the term "tillitsmann", the prime minister evoked a normative and historical metaphor machinery. The word is the title of arguably the most famous book of the whole Norwegian labor movement, written in 1931 by the yet to come prime

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[139] As outlined by Knut N. Kjær, the manager of the Norwegian "Oil-fund" (now "Pension fund – abroad") in his essay with the illustrative title "Highest possible returns for the Petroleum fund" (2002): "The Petroleum fund will act as an financial investor in the international capital markets" (*my trans*.). Warned by the experiences of the Kuwaiti Oil fund, the Norwegian fund wanted explicitly *not* to act as a strategic and demanding investor in companies, and remain a pure financial investor (with ethics constraints).

[140] E24, 08.13.07 (http://e24.no/opsjonssaken/article1933957.ece).

minister Einar Gerhardsen; both strong symbols of the emergence of the whole post-World War II social democratic welfare state.

A highly paradoxical situation thus emerged. The board of Hydro introduced a financial incentive instrument for top managers, the stock options program, to shrink the historical gap and role differentiation between managers and owners of a corporation, a key capitalist institution since the invention and widespread establishment of the "limited liability joint-stock company", incorporated as a "legal person", in latter half of the nineteenth century (cf. Bakan 2004; Micklethwait & Wooldridge 2005). The option measure was introduced by the Hydro board to align the interests of the managers, by turning them in part into owners themselves, with that of the corporation as an incarnation of the owners at large. This aim was in line with the theoretical legitimation of stock options measures. Nevertheless it was the largest owner, the state, that put an end to the options schemes.

Option incentives were initially introduced into the world of corporations to *stop* the abuse of power among managers. At the time of the inception of the idea of separating ownership and management, it was by many believed to be a recipe for corruption and scandal. Adam Smith, for example, warned about this in his 1776 classic "The Wealth of Nations", because managers could not be entrusted to "steward other people's money". "'Negligence and profusion' would inevitably result when businesses organized as corporations" (referred in Bakan 2004: 6). The idea came to be developed that when being afraid that top leaders have too much power compared to the shareholders, you reward those in power even more in the belief that they, behaving under the assumption of "economic man" notions as "rational egoists", will work more honestly in favor of the company rather than for themselves. In options programs, the challenge in aligning the benefits for the managers themselves and the company perceived as shareholders, is tried resolved.

The huge monetary incentives directed at directors and top managers are based in "shareholder value" thinking, discussed at length in chapter seven, and also so-called "principal agent theory". The latter idea is linked to the notion of information

asymmetry. CEOs and top managers are perceived as possessing the upper hand in terms of information surplus. They are through this advantage enabled to form others understanding of challenges and the situation for the corporation, and may subsequently manipulate the board and the owners. According to Tranøy, herein lies a short circuit in thinking; the stock option measures tries to solve a problem of power by giving incentives to the more powerful (2006: 128).

Judging by the market value increase in Hydro, the effect realized may seem to be the contrary, that the options incentives indeed has contributed so that top management has been working, and succeeding, in increasing the "shareholder value". What portion of this market value increase, if any, that might be attributed to the options program is, however, impossible to assess. In the media debate, Reiten at least, stated that the options program was an incentive mechanism that worked. This contention raises yet other questions about the state of affairs in management motivation in the first place, and so on and so forth. The media focus on "greed" as a major motivational force, I feel is overly speculative and premature, while reflecting the hegemony of mainstream neo-classical premises and neoliberal ideology related to human nature as an egoistic and individually acquisitive economic man.

On the other hand, as discussed since the inception of "the corporation", it is no doubt that shareholders have tried to manipulate managers into favoring the shareholders in relation to other stakeholders of companies. This tendency has not emerged unwarranted however. Several scholarly works have testified how managers seized control over the large corporations and manipulated shareholders for their own purposes (cf. Galbraith 1967). This situation has led to counter-pressure from the investor and owner communities, and according to one analysis: "… the problem was fixed, all right, but the pendulum swung the other way – with a vengeance" (Mintzberg, Simons & Basu 2002: 70). According to these authors the shift was achieved by co-opting the chief executives by "… rewarding them disproportionately for the performance of the entire enterprise. Through options and bonuses they have bought off the chiefs" (ibid.).

The authors refer to one study showing that during the 1990s CEO pay rose by 570 %, while profit rose by 114 %, and the average worker pay by 37 %. The latter barely ahead of inflation, which was 32 % over the same period. The legitimation for this stark asymmetry in compensations is related to the "fabricated" notion of the "heroic leaders", the leader who single-handedly steers the business to success, who alone is responsible for its performance – at least as long as the performance is good. Maintaining this illusion enables the shareholders to overcompensate top management with the aim of manipulating them to act more or less uniformly in the name of "shareholder value".

One might speculate that what is really behind slogans among corporate managers like "internationally competitive compensation", is more related to prestige and reputation. In a knowledge economy, not least in its contemporary neoliberal financialized version, characterized by value appreciations and thus an economy of signs, salaries and compensations are symbols of knowledge, power and prestige. Money is the mechanism making managers comparable in status. That is to say, in the ecology of management discourse a low salary is translated into an image of a lesser capable manager.

In the public debate, however, as we have seen, the board's actions and the top managers role were judged as belonging more to the moral community of labor relations, while the state, acting as a supreme judge both judicially and morally, did so as a capitalist owner-state acting apparently on behalf of the interest of the working class and against "greed" and the elite capitalist class. Indeed, a complex morally symbolic spectacle. To better be able to unfold these complexities, we also need a more thorough understanding of the changes undergone in recent decades in the national political climate and its perception of control, administration and regulation of the economic sphere. This is pursued in the next section below.

In any case it seems that the Hydro board and top management miscalculated, and lacked the necessary musicality to anticipate, the media attention and intense public debate that emerged around these financial instruments. The complex and changing

idioms of the domestic capitalist relationships may at least partly account for some of it. The fact that the Norwegian state, through it's gigantic 2 trillion NOK pension fund,[141] invests most of the money in capital markets, pure money management and financial speculation, does not seem to bother the public to a considerable degree (see also footnote 139). The state is thus both an incarnation of the common people's moral community of modesty and "class compromise", for the sake of the preservation of the welfare state, while simultaneously an incarnation of the "purest" capitalist credo of using money to make more money. That is, without investing in any productive capacities. Practices surely embedded in quite different moral connotations. Balancing this paradoxical role of the state require considerable political skill, as the option case has illustrated.

To reconcile the paradox one might speculate that "people" are outraged when top leaders, perceived to be wage earners, are overcompensated. "Real capitalists", on the other hand, might be seen as more or less tacitly outside of the moral community, and are silently accepted when the benefits of their speculation seems beneficial to Norwegian society, as in the case with the pension fund. In one respect, then, the "problem" of the Hydro management is that they are not seen in the public as representing "true capitalists" that make money both for themselves and for society as a whole. At least it seems like the level of acceptance in the public of Hydro managers also working "for themselves" is relatively much lower than for "true capitalists". In reation to a company as Hydro, arguably the most important "industrial locomotive" throughout Norway's history. The top managers seem to be "caught in the middle", as it were, not properly defined on either side of the capitalist-labor relations compromise. And this "middle ground" might as well signify something significant about the Nordic and Norway's model of welfare or democratic capitalism.

As described above, the intense and heated public debate in 2007 about the Hydro stock options compensation program was preceded by a smaller one in 2006. The

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[141] By the end of June 2007 the market value of the "State pension fund – abroad" was 1 939 billion NOK (Norges Bank: www.norges-bank.no).

former one also indicated several of the same significant themes related to the functioning of contemporary capitalism. First, the former debate was also ambivalent as to where the contextual limits for the debate was to be drawn. Some participants used the global outlook while some referred to Norway as the relevant context. Hydro was an exemplary case in this matter, a partly state-owned company, while at the same time the vast majority of its business operations and employees are located outside of Norway (see Table 1). Secondly, the debate also in 2006 turned into a discourse on moral values, as noted for example by the Minister of finance, Kristin Halvorsen, who on national TV stated that: "This is a debate about moral values" ["Dette er en verdidebatt"].[142]

In the newspapers, the debate was also framed in terms of moral questions. It evolved around notions of "greedy leaders", leaders driven by avarice, allegations of envy, about cultural conceptions of decency and putting price tags on people's heads. It was about personal gain versus long-term interests, and about company profits and stock prices versus their societal obligations. As the headline of one academic's feature article in a daily newspaper stated: "The gospel of egoism".[143] From a relatively marginal debate about a financial instrument most people until recently had never heard about, it evolved into an extraordinarily energetic debate about the contents and the basis of the Norwegian social contract at large; about the national identity and democracy in a global world; about deep questions of value, both moral values and economic values of types of work and people; about ownership rights and roles, and the role the large, "flagship" companies of Norway was to play both in Norwegian society and in the global context. In short, it pinpointed how the so-called "global" companies and the globalized capitalist economic system is a deeply ambivalent moral economy still firmly rooted in the nation state and national cultural discourse. It leads to the conclusion that on one level we must talk of capitalisms, in the plural, rather than capitalism in the singular also in the "global economy".

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[142] NRK, "Redaksjon EN", 11.16.06.
[143] Tranøy, B. S. Dagbladet, 11.20.06.

This insight propels us into a more thorough investigation of the Norwegian system of capitalist relations, as a significant context for Hydro project and corporate managing and economic activities. Because related to the above interpretations of the paradoxes of the options case, an adjacent perspective is that politicians and the public have "given up" controlling and thus judging especially *finance* capitalism. In this perspective finance capitalism and contemporary corporations have grown so strong, riding the waves of perceived deterministic forces of economic globalization, that they are seen as outside of state regulative control, indeed outside of the entire inter-state system of regulation. This perception, if indeed prevalent, is obviously wrong. The current "global financial casino" (described below), as all previous historical forms of capitalism, is sanctioned and partly constituted by the political inter-state system; for example has deregulation of capital flows been extensive under neoliberalization (cf. Arrighi 1994; Bhagwati 2004: 202). Today also (de)regulated by its various international semi-state organizational bodies, like the IMF, WTO and the World Bank.

Dismantling Norwegian democratic capitalism?

Privatization, deregulation of the economic sphere, free flow of capital in particular, market mechanisms in the public sector, in short the "neoliberalization of society" (Harvey 2005; Duménil and Lévy 2004), has since the 1970s constituted the main transformatory processes also of Norwegian society, like it has been throughout most of the world. Neoliberalism is by now the most common term used to describe the transformations capitalism and capitalist societies nationally and globally underwent at the turning points of the 1970s and 1980s. Following Harvey, as noted in chapter two, I mean by neoliberalism:

> "… in the first instance a theory of political economic practices that proposes that human well-being can best be advanced by liberating individual entrepreneurial freedoms and skills within an institutional framework characterized by strong private property rights, free markets, and free trade. The role of the state is to create and preserve an institutional framework appropriate to such practices" (ibid.: 2).

There is a crucial distinction between classical liberalism and neoliberalism in the assigned role of the state. In the words of Mark Olssen:

> "Whereas classical liberalism represents a negative conception of state power in that the individual was to be taken as an object to be freed from the interventions of the state… neo-liberalism has come to represent a positive conception of the state's role, seeing the state as the active agent which creates the appropriate market by providing the conditions, laws and institutions necessary for its operation… In neo-liberalism… the state seeks to create an individual that is an enterprising and competitive entrepreneur" (2003: 1999).

Also, there is a significant twist on the neoliberal conception of human nature. Postulates of liberalism, including the idea of universal egoism, the self-interested individual and the invisible hand that provides also the best outcome for society as a whole, and the political maxim of laissez-faire, are all continued in neoliberalist ideology. However, a further element is added, one which "… involves a change in subject position from 'homo economicus', who naturally behave out of self-interest and is relatively detached from the state, to 'manipulatable man', who is created by the state and who is continually encouraged to be perpetually responsive" (ibid.). Under neoliberalism the state itself is increasingly a subject of commercialization. One symptom of this is the much-discussed increase of "audit cultures" and the "audit society" (cf. Power 1997; Strathern 2000; Leys 2001). As we have seen with the Norwegian state, the most significant state in Hydro's network of relations, this ideological bent has paved the way for the mega scale "finance investment fund state". A financial investment state has developed in just a few years, and it is unprecedented in Norwegian history.

Individual freedom was a wise choice for the "core value" in neoliberalism, and something easily appealing to most people. However, freedom is a complex philosophical concept that may mean a number of different things in various contexts. There is also, however, a marked gap between neoliberal theory and practices of neoliberalization (cf. Harvey 2005). In Glyn's thoughtful review, it was the

"unleashing" of capitalism from the challenging 1970s that ushered in the current area, characterized by a new policy framework of austere macroeconomic policies, privatization of nationalized industries and the deregulation of markets (2006). However, according to Glyn, and a growing literature on globalized neoliberalization, the overall record of neoliberalism has been slower economic growth and greater instability, widening inequalities and diminishing levels of social welfare.

Looking at Norway in particular, it seems like a partial dismantling or at least a major transformation of the social democratic state and the Norwegian model of "democratic capitalism" (Sejersted 1993) has in effect been a partial result of the active political processes of neoliberalization in Norway. The concept of "democratic capitalism" is conceived of as complementary to Chandler's categorization of US "competitive capitalism", British "personal capitalism", and German "cooperative capitalism".

One of the main processes in which this transformation is achieved, on a global scale and of high relevance to our empirical context in Hydro, is the way neoliberal globalization, or "financialization", "… is also destroying conditions on both product and financial markets that are necessary for the successful long-term performance of large nonfinancial firms" (Crotty 2005: 107). This process has in turn serious consequences for societal reproduction, when accepting the general view of Schumpeter and Chandler that large nonfinancial corporations, operating in oligopolistic markets, like Hydro, have been the main sources of capital investment, technological change and productivity growth in capitalist countries for the major part of the twentieth century (ibid.).

The recent shift in Norwegian political economic social relations is extensively documented and described, for example by historian Berge Furre (1992), labeling the period from 1981-1990, in his "Norwegian History 1905-1990", as "the years of the market" ["Marknadens år"]. In this review the belief in the market became ideology in this period, and he states that this "market fetishism" in effect contributed in such a way that the "… social democratic order lost its moral sustainability as a meaningful vision"

(ibid.: 489, *my trans*.). As described by historian of political ideas Rune Slagstad, the shift in the mode of governance of the public sector was led by the coming to power of a new "market-technocratic steering elite" ["markedsteknokratisk styringselite"] (2001: 503-524). An analysis of the extensive "marketization" of Norwegian society and institutions can be found in Tranøy (2006), who concludes that a decay of liberal ideals has occurred in the "market society".

Like recent assessments indicate, the exact nature of the changes is, quite logically, in some dispute. An anthology by the political science establishment in Norway concludes that the reforms that has commenced in the Norwegian public sector the recent decades has been a "loosening up" and deregulation of public tasks, and a greater emphasis upon economic efficiency and "profitability" in the public sector; while other neoliberal measures and aims such as privatization and reduction of the public sector has not been so widespread (Mydske, Claes and Lie 2007). Another recent contribution by Noralv Veggeland (2007) argues that the most radical changes to the Norwegian welfare model occurred not in the 1980s, but rather in the 90s and 2000s. And the main issue has been a market oriented competitive organizing of the public sector under neoliberal influences. He argues that in terms of "outsourcing" of public services Norway has been in the forefront also globally, only lagging behind the UK and the US. The neoliberal penetration of the public sector happened for example through the breaking down of public service monopolies, of exposing the public sector to market competition, and by liberalizing the labor market. Nevertheless, in Veggeland's view it is still adequate to speak of a particular Nordic welfare model, although it has been considerably changed in the direction of "market-friendly solutions".

Thus, the broader picture seems relatively clear. A host of neoliberal changes has taken place. Privatization has commenced, but arguably not as extensive as in many other countries, while considerable use of market mechanisms, "market organizing" and deregulation have indeed been heavily introduced; from infrastructures such as telecommunications, transportation and power supply, to health, education and

broadcasting. Versions of "New Public Management", described by Veggeland as a global pandemic, was widely implemented in the Norwegian public sector (cf. Hernes 2007). Many new "markets" have been created domestically, some of them also linked to the "global market"; for example the Norwegian government, and especially Jens Stoltenberg before becoming the Prime Minister, has been a strong advocate and one of the ideational originators of the global CO2 exchange market.

A particularly interesting example for our present study, and an area in which Norway was a liberalization pioneer, is in the creation of the power market. The main architect behind the liberalization of the power market was Tormod Hermansen, from his position as Secretary General of the Department of Finance, one of the prime leaders of the new "market-technocratic steering elite". Slagstad notes that;

> "Hermansen has realized his market-technocratic program of reform in two key areas. The first was el-power. During a few years around 1990 Norway became a "leading example" ["foregangsland"] of power liberalism. Using the market-economic expertise of the Norwegian School of Economics and Business Administration (NHH), Hermansen strategically outmaneuvered other initiatives and political players. The report produced by NHH was important when the new law was established. Interestingly it was the later President and CEO of Hydro, Eivind Reiten, in his capacity as Minister of oil and energy at the time who, based upon the report, proposed the new energy law" (2001: 515, *my trans*).

Prior to his post as Minister of oil and energy Reiten served as the director of Energy in Hydro. Simplifying a vastly more complex process, we might say that it was Hermansen who designed and informally prepared the ground for "the world's most advanced power market", as he himself later labeled it (Hermansen 2007), while it was Reiten in his role has Minister who enabled the necessary formal and institutional procedures. Hermansen's other liberalization success was the privatization of the telecommunications area.

Thus, it is of paradoxical significance that the same Hermansen, 15 years later, wrote a highly critical essay about the Hydro options case (2007). The government's handling of the case also received critical comments. As an interpretation of the essay in strategic terms, it is an effort by Hermansen to position himself in line with the potential

coming of new political trends, in line with the public consternation and the government's interventionist handling of the options case, a break with the so-called "Hydro-model" of passive state ownership, and to interpret history in light of these new trends. Hermansen's ambivalent positioning with respect to these issues is highlighted when comparing two passages of his essay. Related to the role of the state and the Minster for Trade and Industry as the major owner in Hydro he writes: "As performer ["utfører", a New Public Management term], of the ownership… the Minister must participate in the shareholder community and contribute to maximize the value creation for the company, from a shareholder perspective" (ibid.: 124, *my trans*). On the next page he describes how Hydro in recent years has become "unrecognizable". Earlier being the star example of Norway's emergence as an industrial nation, with a unique capacity of technical and industrial development, and the creation of new opportunities and managing extensive reorganization processes in socially acceptable ways.

Hydro is described has having been exemplary in terms of cooperation between private and state capital, and also between labor unions and management. Hermansen writes: "Hydro had… the characteristics of being an industrial locomotive were value creation based on industrial development had priority ahead of stock price and development of owner values" (ibid.: 125, *my trans*.). In contrast he states that Hydro now is increasingly anchored in, and even controlled by, the globalized financially oriented capital market. He is obviously right in describing a turn towards finance, but both overemphasizes the turn, fails to recognize its multiple sources, and most tellingly fails to acknowledge the fundamental neoliberalized changes in the Norwegian context of capitalist social relations that he, as a prominent member of the new "market-technocratic steering elite", himself has been one of the major architects behind. The paradox entailed in the juxtaposition of the two quotes above highlights these problems.

It seems like both Hermansen, with respect to his earlier key role in the neoliberalization of Norwegian society, and Reiten, in his capacity as President and CEO of Hydro in need of cheap energy for aluminium production – seeking a secluded

(from the free consumer market) industrially regulated power regime – both faces some of the unintended consequences of their own prior roles and actions.

Dynamics of change and continuity

One question that begs an answer is why the turn to shareholder value appeared as late as it did, in 1999, in the most "global" of the large Norwegian corporations; positioned with one leg in the increasingly neoliberalized national political regime of Norway, and with the other leg firmly embedded in the increasingly financialized global capitalist system. The brief historical answer is that Hydro has possibly been, and arguably continues to be until the present day, one of the most profound culture-bearing institutions of "democratic capitalism". In this simplified sense, Hydro preserved some of the core values embedded in democratic capitalism somewhat longer than the Norwegian state.

But then again, as discussed above, the major neoliberal changes in the Norwegian public sector did arguably not occur until the 1990s and 2000s. And as the Norwegian state might still be said to embody a particular form of the Nordic welfare model, Hydro continues to instantiate values of "democratic capitalism". For example, the closures of the key plants in Høyanger, Årdal and Herøya in Norway, the Bécancour plant in Canada, and the fascinatingly documented closure process of the Hydro Aluminium Motorcast foundry in West Yorkshire, England (Meltdown 2004), were all done "in socially acceptable ways", to use Hermansen's own phrasing. And all of these closures happened after the millennium and Hydro's "turn to finance".

As touched upon above, however, internally in Hydro there must have been a lack of anticipation of how dramatic effect the options program would instill in the public debate. This rings true with an assessment of neoliberal attitudes among Norwegian constituents (Hellevik and Knutsen 2007). Although the overall differences were not profound in terms of "social indicators", as an example neoliberal attitudes found it strongest support among private sector managers, especially in banking,

insurance, finance and business services; and the lowest following was found among workers and subordinates, especially in the public sector and in agriculture.

Another reason for this possible lack of preparedness is the fact that these instruments are relatively new financial inventions. Some of their unintended consequences have possibly not been clear even to major players. For example, derivatives are usually not included in state financial accounting. Even more troublesome is it that derivatives are "… completely outside the conceptual realm of traditional accounting, which can think of debt and equity, liabilities and assets, but not more insubstantial instruments like options, futures, and inverse floaters" (Henwood 2005: 192). The very opacity and immeasurability of an economy of abstract derivatives precisely emphasizes the case of financialization: "… layers of claims have been piled upon layers of claims, most of them furiously traded, with some resisting definition and measurement" (ibid.). The innovation speed in financial instruments, it seems, has not only taken the general public aback, but also leaders and control systems in major industrial corporations and governance institutions.

Drawing upon studies from the inside of the economic establishment of Wall Street banks, IMF and the WTO itself (e. g. Alexander, Dhumale and Eatwell 2005; Schinasi 2005), this argument is eloquently outlined by historian Gabriel Kolko in his essay "Weapons of mass financial destruction (2006). The title alludes to a description made by the Forbes-listed second richest person in the world, Warren Buffet, concerning credit derivatives, one of the relatively new financial instruments of great significance today. The Norwegian translation of the essay, as it appeared in Le Monde Diplomatique, was telling: "Finansielle trolldomskunster" ["The wizardry of finance"].[144]

A brief example illustrating the non-rationality of financial markets: Ford Motor Company announced in early September 2006 that they sustained yearly losses in the range of 7 billion dollars. What happened? The stock price increased with 20 percent

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[144] Gabriel Kolko, "Finansielle trolldomskunster", Le Monde Diplomatique. Can be accessed at LMD here: http://www.lmd.no/index.php?article=1075 (November 8, 2006).

(ibid.). Of course, many factors are involved in determining the stock price, but this kind of connection seems to defy the very logic of capitalism itself. On the innovations in the finance sector, noted economist Paul Krugman wrote in late 2007, in relation to the so called "sub-prime mortgage crisis": "The bottom line is that policy makers left the financial industry free to innovate – and what it did was to innovate itself, and the rest of us, into a big, nasty mess."[145] Krugman quotes one of the players in the game, a bond manager that indicates that not even the Chairman of the world's most important central bank understands the workings of the contemporary economy:

> "What we are witnessing, is essentially the breakdown of our modern-day banking system, a complex of leveraged lending so hard to understand that Federal Reserve Chairman Ben Bernanke required a face-to-face refresher course from hedge fund managers in mid-August" (ibid.).

More about these issues below. In Hydro it seems that they did not anticipate the full perspective of the possible consequences, neither monetary or morally, of their options packages.

As mentioned above, the neoliberalized changes have put the Norwegian model of "democratic capitalism" under heavy pressure. The Hydro turn to finance and the more or less concomitant neoliberalized turn of Norwegian institutional relations, led by the new "market-technocratic steering elite", must however both be analyzed in the wider globalized capitalist context. It might be interpreted as a local version of the global "turn to finance", the implementation of "remarketized capitalism" (Fulcher 2004), described by several authors as a "financialization of the world economy" (cf. Arrighi 1994; Epstein 2005).[146] To provide another ethnographic vignette to an

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[145] "Innovating our way to financial crisis", The New York Times, December 3, 2007. The text can be accessed at "CommonDreams", here: http://www.commondreams.org/archive/2007/12/03/5569/ (04.12.07).

[146] According to the historical scheme of Arrighi, drawing on Braudel's analysis, the 1970s marked the beginning of the *fourth wave* of "financialization" of the capitalist world economy. All these waves were similar in the respect that the financial expansion signaled a fundamental crisis in the system of accumulation. However, all had its unique features. The fourth wave is unique because it is not based in some country's regulated banking system, but in the stateless and unregulated "banking system" of the "Eurodollar market" (cf. Arrighi 1994; Dickens 2005; Appendix II).

exploration of the "financialized" global economic context in which both the Norwegian and the Hydro shifts must be interpreted, a brief description of so-called "financial risk management" in relation to Hydro and their projects is given.

Financial risk management in projects

To manage the multiple varieties of "risks" that is associated with Hydro investment projects, a vast battery of practices is mobilized, related to "… all aspects of value creation, including strategy, finance, commercial matters, organization, HSE, reputation, corporate responsibility, regulatory and legal matters".[147] Here I want to focus solely on those practices associated with handling the risks related to financing projects and operations. Elements of this was also briefly described in the section "Decision Gate Four" (see chapter seven).

To handle financial risk, Hydro is immersed in various types of financial markets in numerous ways. Risk management related to investment projects (and daily operations) is conducted in a variety of practices and at various levels. These markets trade in various "paper assets" like stocks, derivatives like futures, swaps, options, foreign exchange, notes, mortages, treasuries, bonds, and other paper property titles. More appropriately these assets should arguably be labeled "virtual", "digit" or "sign assets". As reported in their annual reports Hydro is engaged in the majority of the financial instruments listed above. From the same source I quote some of the overall activities:

> "The overall objective of financial and commercial risk management is to safeguard Hydro's ability to continuously meet its cash commitments and maintain a strong financial position. This includes identifying and monitoring the Company's main risk exposures, quantifying the potential impact on key financial ratios and proposing corrective actions when deemed appropriate. Shortfalls in operational cash flow due to unfavorable

[147] Annual report 2006. (http://www.hydro.com/en/investor_relations/financial_rep/annual_reports/2006/corporate_governance/business_planning_risk_management.html).

> developments in prices of main products, raw materials and/or exchange rates could substantially impact Hydro's financial position. Cash commitments are risk evaluated against cash flow from operations. Probabilities of not meeting set financial targets, such as maintaining the adjusted net debt/equity ratio target of 0.5, are monitored. Simulations of cash flow scenarios, using a 5-year rolling horizon, are carried out for this purpose. The outcome of this analysis is reported to management on a quarterly basis. Mitigating financial and commercial risk exposures through the use of derivative instruments is done only to some extent. For this purpose, Hydro utilizes financial derivatives as well as commodity derivatives. The most common use of financial and exchange traded commodity derivatives relates to currency hedging and LME-hedging as part of the Company's day-to-day aluminium operations."

It is appropriate to utilize derivatives to mitigate financial risk, because "… a derivative is a transaction that is designed to create price exposure and thereby transfer risk by having its value determined – or derived – from the value of the underlying commodity, security, index, rate or event" (Dodd 2005: 170). For a primer on derivatives instruments, see Dodd (ibid.). From the "Note 23. Market risk management and derivative instruments", of the Hydro Annual report (2006), it is written:

> "Hydro is exposed to market risks from prices on commodities bought and sold, prices of other raw materials, currency exchange rates and interest rates. Depending on the degree of price volatility, such fluctuations in market prices may create fluctuations in Hydro's results. To manage this exposure, Hydro's main strategy is to maintain a strong financial position to be able to meet fluctuations in results. Market risk exposures are evaluated based on a portfolio view in order to take advantage of offsetting positions and to manage risk on a net exposure basis. Natural hedging positions are established where possible and if economically viable. Hydro uses financial derivatives to some extent to manage financial and commercial risk exposures".[148]

Hedging is the strategic process by which financial risk is sought taken out, or reduced, in relation to some investment. It can involve currencies or derivatives and many other

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[148] Hydro Annual report 2006. (http://reports.hydro.com/en/investor_relations/financial_rep/annual_reports/2006/financial_statements/notes_cons_fin/note23.html).

measures. Related to Hydro's activities in the electricity market, Hydro "… utilizes both physical contracts and financial derivative instruments such as futures, forwards and options. These are traded either bilaterally or over electricity exchanges such as the Nordic power exchange (Nord Pool). *Hydro participates in limited speculative trading"* (my emphasis). In the aluminium business a host of financial instruments are mobilized in the service of risk management. I will quote parts of the activity at some length, to provide the reader with enough empirical material to give an impression of this rather complex landscape of a multitude of financial instruments; and how it relates to business realities of production, sale, means of payment, debt and credit, interest rates and exchange rates. It also conveys the type of language and rhetorical form this field of finance is imbued with. All of it is extracted from Note 23 of the 2006 Annual Report:

"Hydro enters into future contracts with the London Metal Exchange (LME) mainly for the following purposes. The first is to achieve an average LME aluminium price on smelter production. Second, because the Company's downstream business and the sale of third party products are based on margins above the LME price, Hydro hedges metal prices when entering into customer and supplier contracts with corresponding physical or derivative future contracts at fixed prices (back-to-back hedging). In order to secure the margins for certain projects or related to special situations, Hydro has sold forward on a longer-term basis. In these situations, hedge accounting has occasionally been utilized. See the section on cash flow hedges below.

The following types of commodity derivatives were recorded at fair value on the balance sheet as of 31 December 2006 and 2005:

Amounts in NOK million	**2006**	2005
Assets:		
Swaps and futures, crude oil	**34**	9
Electricity contracts	**1 920**	1 570
Natural gas contracts	**4 184**	4 275
Aluminium futures, forwards, swaps and options	**30**	-
Total	**6 168**	5 854
Liabilities:		
Electricity contracts	**(1 146)**	(391)
Natural gas contracts	**(2 276)**	(4 063)
Swaps and futures, crude oil	**(285)**	(175)
Aluminium futures, forwards, swaps and options	**(893)**	(902)
Total	**(4 600)**	(5 530)

[Table 7: Overview of Hydro commodity *derivatives, 2005 and 2006 (Source: Annual Report 2006, note 23).]*

Embedded derivatives
Some contracts contain pricing links that affect cash flows in a manner different than the underlying commodity or financial instrument in the contract. For accounting purposes, these embedded derivatives are in some circumstances separated from the host contract and recognized at fair value. In some cases, the entire contract, including the embedded derivative, is recognized at fair value. Hydro has separated and recognized at fair value embedded derivatives related to aluminium-, inflation-, Brent- and coal links, in addition to currency forwards, from the underlying contracts.

Foreign currency risk exposure
Prices of many of Hydro's most important products, mainly crude oil, aluminium and natural gas, are either denominated in US dollars or are influenced by movements in the value of other currencies against the US dollar. Further, the cost of raw materials, including natural gas, NGLs and alumina, are affected by the US dollar price of crude oil or the US dollar price of aluminium, and variations in the US dollar exchange rates against local currencies. Hydro's primary foreign currency risk is therefore linked to fluctuations in the value of the US dollar. To reduce the long-term effects of fluctuations in the US dollar exchange rates, Hydro has issued most of its debt in US dollars. As of 31 December 2006, 85 percent of Hydro's long-term debt is denominated in US dollars. The majority of the remaining long-term debt is denominated in Euro, Danish kroner, and British pounds.

Hydro also employs foreign currency swaps and forward currency contracts to manage the currency exposures for Hydro's long-term debt portfolio. Forward currency contracts are entered into to safeguard cash flows for forecasted future transactions or to cover short-term liquidity needs in one currency through excess liquidity available in another currency.

Hydro also incurs costs related to the production, distribution and marketing of products in a number of different currencies, mainly Euro, Norwegian krone, US dollar, Canadian dollar, Australian dollar, British Pound and Swedish krone. Consequently, the effects of changes in currency rates on the translation of local currencies into Norwegian krone for subsidiaries outside of Norway can influence the comparative results of operations.

Contractual arrangements for the majority of the purchase and sales activities within the European aluminium business are committed in Euro based on the prevailing exchanges rates between the US dollar and Euro at the time of entering into the contracts. This gives a Euro exposure in the operating income, from the time of entering into the contractual arrangements until settlement. This exposure is generally quite short term as the contracts are committed and settled within six months.

Hydro has previously designated a portion of its foreign-denominated long-term debt, including certain related balances in currencies arising from foreign currency swaps and forwards, as hedges of net foreign investments in subsidiary companies. As of 1 January 2005 Hydro no longer designated portions of its long-term debt and forward currency contracts as hedges of net investments in foreign subsidiaries.

The foreign currency effects of these former net investment hedges reflected in the cumulative translation section of shareholders' equity produced a NOK 320 million after-tax gain during the year ended 31 December 2004; offsetting a foreign currency translation loss of NOK 1,628 million in shareholders' equity for 2004. On 10 November 2005 Hydro agreed to sell the entire investment in Biomar Holding A/S. A net investment hedging loss of NOK 33 million was expensed to the income statement from equity relating to this transaction. During 2006 no former net investment hedges have been reclassified to equity.

The following types of financial derivatives were recorded at fair value on the balance sheet as of 31 December 2006 and 2005. Currency contracts that are designated as hedging instruments in cash flow hedges are not included.

Amounts in NOK million	**2006**	2005
Assets:		
Currency forwards and swaps	**908**	310
Liabilities:		
Currency forwards and swaps	**(136)**	(297)

[Table 8. Overview of Hydro financial *derivatives. As noted, currency contracts used as hedging instruments in cash flow hedges, indicated below, is also pursued (Source, Annual Report 2006, note 23).]*

Interest rate exposure
Hydro is exposed to changes in interest rates, primarily as a result of borrowing and investing activities used to maintain liquidity and fund business operations in different currencies. Hydro maintains a high ratio of long-term, fixed-rate debt, as a proportion of its total interest bearing debt, with an even debt repayment schedule. Hydro uses foreign exchange and interest rate swaps from time to time and other derivatives to optimize currency and interest rate exposure. The fair value of interest rate derivatives as of 31 December 2006 and 2005 are immaterial and not presented here.

Cash flow hedges
Hydro has over time entered into hedge programs to secure the price of aluminium ingot to be sold. Aluminium futures and options on the London Metal Exchange have been used for this purpose. Some of these hedge programs are accounted for as cash-flow hedges, where gains and losses on the hedge derivatives are recorded to Other comprehensive income (OCI) and will be reclassified into operating revenues (cost of goods sold) when the corresponding forecasted sale (purchase) of aluminium ingot is recognized. As the critical terms of the commodity derivatives and the forecasted aluminium sales are substantially similar, no ineffectiveness was recognized in 2006, 2005 or 2004 in connection with these cash flow hedges.

Hydro has the following aluminium positions with LME as of year-end:	2007	2006	2005	2004
Aluminium sold forward with hedge accounting (1,000 mt)[1)]		485	336	315
of which open at year-end (1,000 mt)[2)]		410	312	287
Average prices achieved in hedges in USD [3)]		2 108	1 750	1 505
Expected to be reclassified to earnings (after tax) during the year [4)] (NOK million)	(541)	(154)	197	261
Reclassified to earnings from OCI after tax [5)] (NOK million)		(349)	185	201

[Table 9. Cash-flow hedging related to aluminium prices at LME (Source, Annual Report 2006, note 23).]

Hydro hedged the foreign currency exposure between US and Canadian dollar in connection with a major expansion project at the Alouette plant in Canada over the period March 2003 to March 2006. No amount of ineffectiveness was recognized during the life of the hedge. An annual gain after tax of NOK 3 million was reclassified from OCI into earnings during the period ending 31 December 2006 and 31 December 2005. A gain after tax of NOK 3 million is expected to be reclassified from OCI into earnings during the period ending 31 December 2007.

The following fair values were recorded on the balance sheet for hedging instruments as of 31 December 2006 and 2005:

Amounts in NOK million	**2006**	2005
Assets:		
Cash flow hedging instruments, currency	**380**	730
Total	**380**	730
Liabilities:	**-**	-
Cash flow hedging instruments, aluminium	**(1 299)**	(844)
Total	**(1 299)**	(844)

[Table 10. Overview of use of hedging instruments, 2005 and 2006 (Source, Annual Report 2006, note 23).]

Economic hedges
In certain cases, Hydro enters into derivative transactions which are not designated as hedges for accounting purposes, but provide an economic hedge of a particular transaction risk or a risk component of a transaction. Economic hedging instruments include aluminium future contracts on the LME, oil swaps and certain other derivative instruments. Gains and losses on economic hedges are recognized either as a part of operating revenues or as a part cost of goods sold."[149]

This empirical exposition illustrates a portion of the innovations that have happened in the realm of the financial economy, highlighting some of the vast arsenal of financial instruments now available. For Hydro the use of these instruments are foremost in terms of "risk management", and not utilization for speculative gains. The use of financial derivatives and speculation is, as noted in their Annual report several times, allowed only to a "limited" or to "some" extent, as they say. The reason for this, as noted while talking the "traders" in Hydro, is in their opinion straightforward. Hydro is and should continue to be an industrially based non-financial corporation, not a trading company, or a financial organization.

When discussing these issues with them this perception seems to be very clear. Although some of them emphasize that they could have made a lot of money on pure trading activities. But it is also corporate policy, as one trader said: "Guidelines for the

[149] Quoted from the Hydro Annual Report, Note 23. Market risk management and derivative instruments, to be found at http://reports.hydro.com/en/investor_relations/financial_rep/annual_reports/2006/financial_statements/notes_cons_fin/note23.html (10.01.07).

"limits to trading" is set by the corporate management, and it also relates to various aspects of law. In certain domains the law is different for non-financial and financial companies." The "trading activities" in Hydro, the extensive use of various financial instruments and activities in the financial markets, are thus adaptations to a changing environment, were increasing and complex use of these instruments is a requirement to secure, "to manage the risk", of their industrial projects and operations. For example has Hydro developed in-house a sophisticated software system to manage its LME derivative hedging operations. In addition to a pure adaptation, the financial instrument use itself expands the very field of "risks" and "risk management". As neoliberalized globalization – the financialization of the economy and society on a world scale – unfolds, it creates through financial instrument innovations a larger and larger realm of "risk exposure", but concomitantly, a more and more sophisticated set of financial instruments for managing the risks are accompanied.

In the context of the engineer-economist disputes in Hydro projects (see chapter seven), the fear advocated by the engineering experts that Hydro is on a "death march" towards becoming a trading company, can now be analyzed more in its proper context. The frustration coming from the engineering community, that "economists" and financial measures are more and more steering Hydro, had difficult finding a proper outlet. Hydro top management was often called attention to as the source of this change to the worse. The engineers were often ambivalent, however, even in their critique of top management, exemplified by one of the core project specialists. In one sentence he accuses the top management of being "blåruss", "finance economists", and in the next sentence he said: "I'm sure Reiten wants to create something, but there is no will to create value in Norway".

To some extent, as we have described above (and in chapter seven), the "blaming" of top management for the recent changes has strong merit. The turn to "shareholder value" since 1999, with all its accompanying practices, has certainly been a strategic effort by top management. As the present chapter has conveyed however, there exists several layers of contextually significant "forces" above that of top

management, which they have to take into account. As the quote above indicates, the Norwegian system was also considered. Judging by the contentions of the traders themselves, Hydro is far from on a path to becoming a trading company. What has been to little focused in the "native perspectives" among practitioners in Hydro, is the extreme "financialization" of the entire world economy.

In the case of Hydro a paradoxical effect thus emerges. They spend a massive amount of energy, competence and capital in the financial markets to secure that the company may continue to thrive as a technology based industrial "locomotive". However, all of their financial market activities concurrently contribute to the expansion of the volume of transactions in the "financial casino" (Strange 1986), in which they employ these measures to "defend themselves" from. To continue to thrive in the financialized economy also the large non-financial production capitalist actors like Hydro contributes to the expansion of the casino. The notion of the "casino" was noted by Keynes in 1936, when he stated that:

> "Speculators may do no harm as bubbles on a steady stream of enterprise. But the position is serious when enterprise becomes the bubble on a whirlpool of speculation. When the capital development of a country becomes the by-product of the activities of a casino, the job is likely to be ill-done. The measure of success attained by Wall Street, regarded as an institution of which the proper social purpose is to direct new investment into the most profitable channels in terms of future yield cannot be claimed as one of the outstanding triumphs of laissez-faire capitalism…" (referred in Bhagwati 2004: 204).

Here Keynes alludes to the transformation in the reproduction of relations of capitalism from production to financially dominated, as it is reflected in the title of the present chapter "Wagging the dog". However, the casino metaphor is applicable only as far as it goes, as quoted for example by former Treasury Secretary Lawrence Summers in 1989: "The freeing of financial markets to pursue their casino instincts heightens the odds of crisis….Because unlike the casino, the financial markets are inextricably linked with the world outside, the real economy pays the price" (ibid.). On this note, let us explore more in-depth the characteristics of the contemporary "financial casino".

Into the global financial casino

A brief note on some of the commonplace ideas and widespread misconceptions about the idea of "global capitalism" is appropriate before proceeding with our inquiry. Indeed, in many respects the capitalism(s) is now organized on a global scale, as indicated by the existence of the so-called "transnational" or "global" companies worldwide. Most of these companies, however, have originated in a few of the wealthiest countries on earth. Indeed, this reflects some basic realities about capitalism as perceived "globally". Although companies like for example Hydro, with its 25 000 employees in 30 countries, in many respect must be considered to be a global actor, and that the markets for both goods, services, capital and labor in many respects are global in reach, there are fundamental asymmetries, idiosyncrasies and specific constraints to the conception of the globalized economy.

Some of the more fundamental misconceptions are that a) global capitalism is a recent invention, instead it has deep historical roots; b) that global capital circulates globally, while it in reality moves mainly between a minor group of wealthy countries; c) that the importance of nation states and international differences has diminished, when in fact differences abound and nation states are as much a key in the functioning of capitalism and so-called global companies today as ever before, like illustrated by the case of Norway above. Thus, capitalism is differentially constituted, and; d) that global capitalism is converging and is becoming homogeneous, and thus works as an integrating force, when in truth the more global capitalism has become the international inequalities of wealth have dramatically increased (cf. Fulcher 2004: 103).

Nonetheless, contemporary global capitalism, or neoliberal globalization, signifies a short-hand for some fundamental processes that has transformed the world in various ways in recent years, connecting increasingly new parts and actors of the world. Capitalism's institutions and practices are today the worlds unquestionably dominant economic system, unrivaled by any alternative. Most of the global capital flows between North America, Europe and Japan. Castells showed that in 1998 emerging markets accounted for only 7 % of the world's capital, while these countries contained

85 % of the world's population. An indication of the uneven flow of money can be illustrated by the amount of foreign direct investments to poor countries. Almost nothing goes to Africa, while concentration is on a few countries, prominently China, Brazil and Mexico. In the year 2000 the whole of Africa received less than 1 % of the total world foreign direct investment – approximately the same amount as received by Finland (cf. Fulcher 2004). Hydro's "global corporation" reflects these international patterns of distribution. Hydro's global physical presence is also uneven, with a concentration in the wealthiest countries in the world (see the Introduction, the section "Contextualizing the study within Hydro").

Let us now more specifically characterize the form of globalized financial capitalism that presently define the world economy, in which also Hydro projects are asymmetrically situated, in terms of a set of key figures.

Financialication and international economic relations

"The financial markets have taken the world economy hostage", wrote the Financial Times' chief economist Martin Wolf September 11, 2007. The assertion was related to the real estate mortgages and subsequent bank crisis of 2007, were the central banks of several countries "bailed out" the troubled banks. By late 2007, a host of more or less catastrophic sounding messages poured out of the financial press and financial institutions. Most of the major Wall-Street companies, from Goldman Sachs to JP Morgan, now voiced the concern for a "hard landing" for the US economy. Richard Berner of Morgan Stanley entitled on November 12 one of his analysis; "A Perfect Storm for the American Consumer".[150] Possibly even more discomforting was the forecast made by Nouriel Roubini, Professor at the Stern School of Business at New York University, and acknowledged as one of the most reliable "economic prophets". In his regular economic analysis, published on his blogsite Global EconoMonitor, he made the following comment in November 2007: "It is increasingly clear by now that a severe

[150] See http://www.morganstanley.com/views/gef/archive/2007/20071112-Mon.html#anchor5785

U.S. recession is inevitable in next few months... I now see the risk of a severe and worsening liquidity and credit crunch leading to a generalized meltdown of the financial system of a severity and magnitude like we have never observed before."[151] How can such an assertion be contextualized? First, some aggregate figures help us paint the picture of the reproduction and expansion of relations in the contemporary financial economy.

The extreme rise in the international circulation of money since the 1970s has been mainly due to the rise in pure financial transactions, for example money movements related to payments on debts and trading in foreign currencies; the latter which by the end of the century amounted to US $1.5 trillion a day. This is a figure equivalent to more than the *annual* Gross National Product of the UK (Fulcher 2004). The emergence of the Eurodollar, or Eurocurrency, market from the 1960s is the single most important factor in this picture (cf. Dickens 2005; Arrighi 1994). By 2004 this market alone amounted to transactions of US $ 1.9 trillion a day.[152] Taking into account the derivatives market, which accounted for US $ 4.7 trillion in daily transaction, the magnitude of the situation comes into view. However, these are figures that inspire more awe than understanding. According to Castells the "… international investment, mostly of which was speculative, increased by a factor of nearly 200 from 1970 to 1997" (quoted in Fulcher 2004: 94).

There are multiple enablers for this radical increase in the circulation of money. The immediate starting point was the fundamental change in global monetary policy by the complete abandonment of the gold standard in 1971, and thus the termination of the post-war Bretton Woods system of regulated exchange rates. Since that time, variations of floating exhcange rate regimes and thus floating currencies has been norm in the global monetary system. Regulation by central banks has first and foremost been attempted by various inflation targets (Norges Bank 2004).

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[151] Access Roubini's blog here: http://rs.rgemonitor.com/blog/roubini
[152] Bank for International Settlements, BIS Quarterly, December 2004.

As argued by for example by leading central bank economist Murray Rothbard (1983; 1994) and Chairman of the Federal Reserve from 1987 to 2006 Alan Greenspan (1966), the abandonment of the gold standard uprooted the fundamental anchoring of the financial economy to the ”real” productive economy.[153] They, among others (cf. Norges Bank 2004), argue that the “impossible” pressure to keep the dollar pegged to gold (and other currencies again pegged to the dollar), was caused to a large extent by running huge deficits on the balance of payments, and the constraints provided by the gold standard preventing the accumulation of huge national debts. As the US national debt by 2007 has surpassed $9 trillion it seems fair to suggest, as one indication among the others noted above, that the capitalist economy indeed has been “unleashed” (cf. Glyn 2006).

A dismal picture of the development in the US economy under the seven years of the Bush administration is reported by Paul Craig Roberts, a former assistant secretary of the U.S. Treasury and former associate editor of the Wall Street Journal:

> “Washington economist Charles McMillion observes that seven years of Bush has seen the federal debt increase by two-thirds while US household debt doubled… This massive Keynesian stimulus produced pitiful economic results. Median real income has declined. The labor force participation rate has declined. Job growth has been pathetic, with 28 percent of the new jobs being in the government sector. All the new private sector jobs are accounted for by private education and health care bureaucracies, bars and restaurants. Three and a quarter million manufacturing jobs and a half-million supervisory jobs were lost. The number of manufacturing jobs has fallen to the level of 65 years ago… This is the profile of a Third World economy.”[154]

To depict the debt numbers in some perspective, let us put the figures into a literally timely concept. A million seconds is roughly 12 days, whereas a billion seconds is

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[153] Greenspans support of the gold standard is expressed in a chapter in Ayn Rands ”Capitalism: The Unknown Ideal” (1966). Some economists find Greenspans continued support for the gold standard, arguably a marginal position among contemporary economists, somewhat ironic given his role in the Federal Reserve which regulates the current fiat money system. See http://en.wikipedia.org/wiki/Alan_Greenspan

[154] Paul Craig Roberts, The dollar’s reserve currency role is drawing to an end”, *Global Research*, February 6, 2008 (http://www.globalresearch.ca/index.php?context=va&aid=8021).

approximately 32 years. It should thus take 12 days to pay back a million dollar a second. Starting in 2007, a billion dollars, at a dollar a second, is paid back in 2039. A trillion seconds, moreover, is about 32 thousand years.[155] If the dollar is dropped as the global reserve currency, it is "payback time", and that will again prove difficult if not impossible. Or as Craig Roberts puts it: "… the day when it [USA] can no longer borrow will see the government paying its bills by printing money like a Third World banana republic" (ibid.).

The new deregulated monetary regime, coupled with the principles of "fractional-reserve banking", discussed below, enabled another critical factor in the "financialization of the economy"; the radical increase in the total money supply in the economy since the 1970s. Let us first look at the development of the Norwegian money supply.

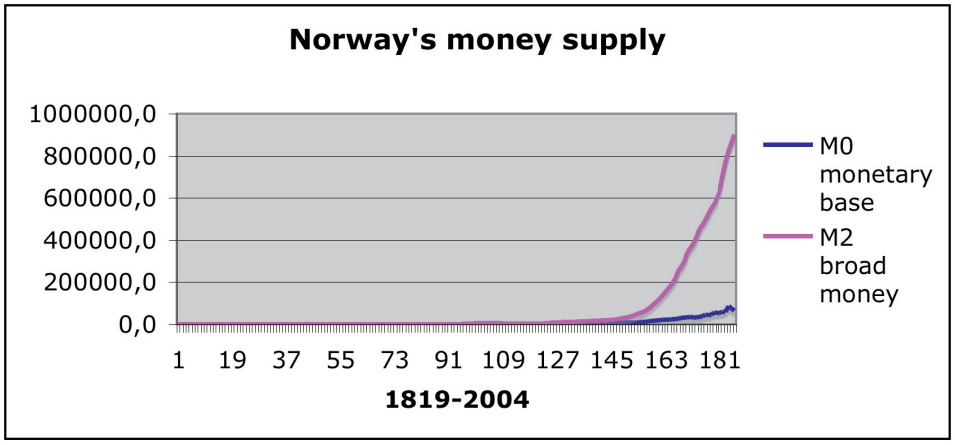

Figure 38. Development of the money supply in Norway from 1819 to 2004. The blue line represents M0, the monetary base of coins and notes. The purple line represents M2, broad money (for definitions see Figure 40 below) (Source: Klovland 2004).

[155] See Hal Lindsey, "Dollar Crisis: None dare call it 'conspiracy'". Global Research, November 11, 2007 (http://www.globalresearch.ca/index.php?context=va&aid=7306).

Due to the long time series the figure masks the fact that the M0 and M2 has been divorcing since the mid nineteenth century. However, we see that a dramatic acceleration of the separation process set in around 1970. Looking more specifically at this period we get the following chart:

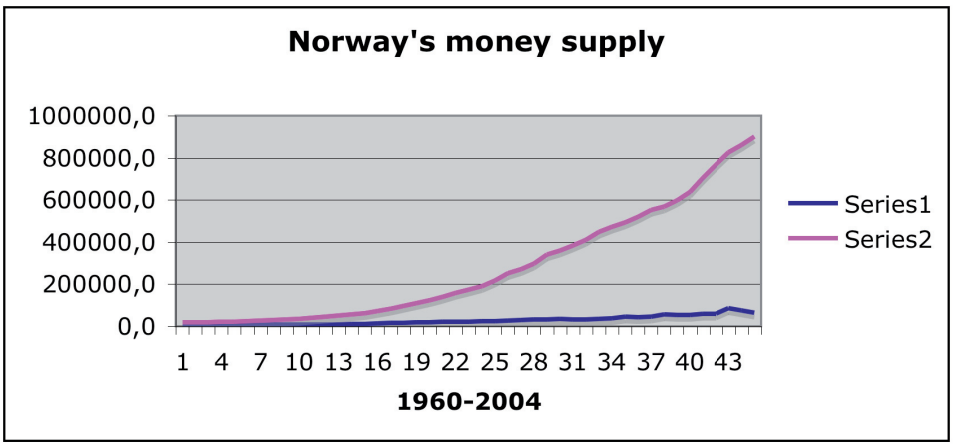

Figure 39. Money supply in Norway 1960-2004. Blue line is M0 and purple line is M2. (Source: Klovland 2004).

We can specifically locate the years when the separation of M0 and M2 really picked up speed, to the years 1970-1973. These years are, not coincidentally related to the year 1971, the year the Bretton Woods system broke down and the final step in the abandonment of the gold standard was implemented throughout the world monetary system. In the 34 years since 1970 the total Norwegian money supply, M2, increased from 39969,5 million NOK to 902095,0 million NOK. This is an increase of an astonishing 2 257 percent. In the preceding 34-year period (from 1936 to 1970), the increase of the money supply was 1293 percent. In the 34-year period before that again (1902-1936), the increase in the money supply was 445 percent. The earlier 34-year period (1868-1902) the increase was 484 percent. Thus, the rate of growth (of the separation of M0 and M2) since the turn of the twentieth century has been approximately proportional and of the second order (quadratic) rather than linear.

The US dollar supply conveys the same recent developments. Data published by the Federal Reserve since 1959 give the following chart:

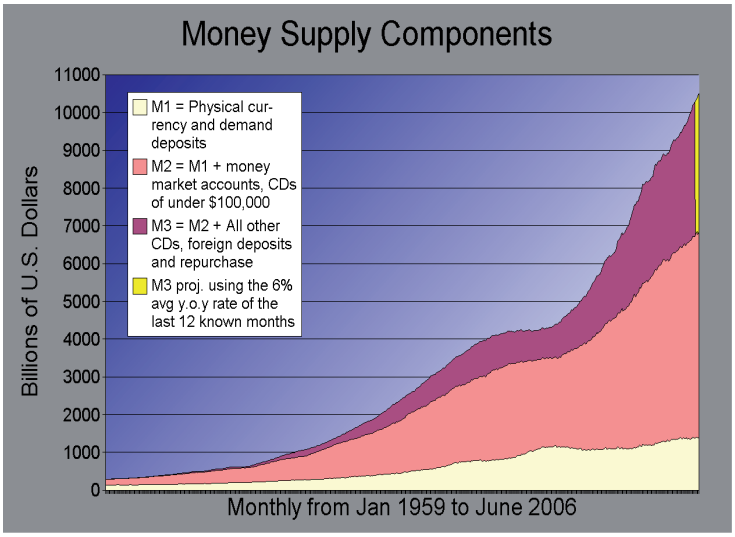

Figure 40. The development of the components of the US money supply, expressed in terms of M1, M2, and M3, measured monthly from January 1959 to February 2006 for M3, and March 2007 for M1 and M2 (Source: Data from the Federal Reserve,[156] figure from Wikipedia[157]).

Both the Norwegian and the US figures show that the dramatic increase of the money supply since the 1970s has come in terms of other money forms than cash, physical currency (designated M0 in the Norwegian system and M1 in the US.). This is significant. The major portion of the rise has come in various forms of virtual money.

Among the enabling factors of the new financialized economy has been the overall deregulatory political ideological climate of neoliberalism, the technological advances in information and communication technologies, and innovations in financial instruments and products. But where does all this money come from? How is it created?

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[156] See http://www.federalreserve.gov/releases/h6/hist/h6hist1.txt and http://www.federalreserve.gov/releases/h6/hist/h6hista.txt

[157] See http://en.wikipedia.org/wiki/Money_supply

Qatalum money creation

Let us use the example of the Qatalum project to illustrate the "money multiplier" mechanism of the "banking" system, a system which links debt creation with money creation. In August 23, 2007, Hydro announced in a press release that the Qatalum project had "… successfully closed a project finance package with lending institutions for the construction of the new aluminium plant in Qatar". Under the headline "Qatalum closes USD 2.6 billion project finance deal", the announcement breifly described the finance package in the following manner:

> "The USD 2.6 billion limited recourse financing is comprised of a USD 2,250 million commercial bank term loan facility and a USD 350 million export credit agency facility with the Norwegian Guarantee Institute for Export Credits (GIEK). The commercial bank term loan facility was joined by 30 banks and the Export Development Canada. The initial request for proposal issued by the Financial Advisor in April 2007 resulted in over USD 3.5 billion offer for underwriting commitments for the commercial bank term loan facility alone."[158]

Using these loan figures we can now on the basis of "fractional reserve" banking principles, calculate an approximation of how much money the lending institutions can "create" or "originate" and release into circulation in the economy. In fractional reserve banking (cf. Rothbard 1983, 1994; El Diwany 2003) the principle is that the bank only need to hold a small fraction of the money as reserves, compared to the amount it may lend out.[159] The reserve ratio sets the minimum reserves each bank must hold to customer deposits and notes. The ratio differs both among countries and for different types of deposits. The conventional notion is that the more risk entailed in the loan the higher is the reserve requirement. In 2006 for example the US reserve requirement was 10 % percent on so-called "transaction deposits" and zero on all other deposits. In

[158] See http://www.hydro.com/en/Press-room/News/Archive/2007/08/17250/ (10.01.07)
[159] For a short introduction to fractional-reserve banking see http://en.wikipedia.org/wiki/Fractional-reserve_banking

Jordan the required reserve ratio is 80 %, in China 12 %, in Swizerland 2.5 %, while in Australia, Sweden, Mexico, Canada, UK and Norway it is "more or less" zero.[160]

The finesse of fractional reserve requirements is that it enables the banking system to originate "new money" and by implication expand the money supply. If the reserve requirement is 10 %, for example, a bank that receives a $100 cash deposit can lend up to $90 of that deposit, keeping only a $10 cash deposit within the bank. If the borrower then writes a check to someone who deposited the $90, the bank receiving that deposit can lend out $81. As this fractional-reserve banking process continues, the banks can expand the initial deposit of $100 into a maximum of $1,000 of money ($100+$90+81+$72.90+...=$1,000). In contrast, with a 20% reserve requirement, the banking system would be able to expand the initial $100 deposit into a maximum of $500 ($100+$80+$64+$51.20+...=$500). Thus, higher reserve requirements should result in reduced creation of transaction deposits.

However, for the present illustration it is worth noting that also in countries with reserve requirements, those do usually not apply to the virtual forms of money M2 and M3 (but only to M1). Deposits such as savings accounts and time deposits such as CDs, have no reserve requirements and therefore can expand without regard to reserve levels. So, for countries without reserve requirements and for the majority of money forms in countries that do, the central banks operates in a way that permits banks to acquire the reserves they need to meet their requirements from the money market. And this is the regulatory mechanism: as long as they are willing to pay the rents for their borrowed reserves at the central bank. Consequently, reserve requirements currently play a relatively limited role in money creation also in countries that have (some) requirements. This is ultimately the reason why the rate of interest is such a big issue in public discourse.

For the Qatalum case we thus have the following situation. The reserve requirements of the lending institutions that provided the finance deal is at the best a fraction of the amount it lent to Qatalum. Let us assume that the reserve requirement for

[160] For particularities of the Norwegian system see Kran and Øwre (2001).

the loan is on average 5 percent. Using the commercial bank loan figure of $2250 million, the banks needed to back up the loan by holding $112.5 million in reserves. Assuming that the banks only business was this loan to Qatalum, and thus that this was all the reserves the bank in fact held because it did not need hold more, the banks balance sheet now looks like this:

Assets	Liabilities
Cash: 112.5 million IOUs from Qatalum: $2250 million	Bank receipts to cash: $2362.5 million
Total: $2362.5 million	Total: $2362.5 million

The result is, as we can see, that the borrowing made by Qatalum enabled the financing institutions to create $2250 million in "new money", to meet the investment demand of the project, and backed only by $112.5 million. That this particular money creation is also backed by the values invested in the project in terms of technology and so on and so forth, is irrelevant for the present focus on the money supply. The core issue here is that looking at the monetary system we have here identified a key mechanism for "money multiplication", a mechanism that account, at least partially, for the drastic increase of the global money supply. By these forms of money creation the non-currency part of the money supply is dramatically increased without the need of being backed by other physical assets such as gold. Instead these virtual forms of money created are backed by loans, mortgages and, to a small extent other bank assets. As supposedly noted by economist Irving Fisher: "Thus, our national circulating medium is now at the mercy of loan transactions of banks, which lend, not money, but promises to supply money they do not possess".[161]

[161] Found at http://www.libertydollar.org/ld/press-kit/prominent-quotes.htm

In the evolution of money Keynes distinguishes for example between "money of account" (the *expression* of debts, prices or purchasing power), and "money proper" (what is actually *discharged* or *held*), and already in its early form money is identified with debt.[162] As Giddens writes:

> "A basic transition is initiated when acknowledgements of debt can be substituted for commodities as such in the settlement of transactions. This "spontaneous acknowledgement of debt" can be issued by any bank and represents "bank money". Bank money is recognition of a private debt until it becomes more widely diffused. This movement to money proper involves the intervention of the state, which acts as the guarantor of value. Only the state… is able to transform private debt transactions into a standard means of payment – in other words, to bring debt and credit into balance in respect of an indefinite number of transactions. Money in its developed form is thus defined above all in terms of credit and debt…" (1990: 23-24).

And while acknowledging that the relation between money and debt is far from new, the relationship as further described below seems to have been configured in new ways in the present.[163] In the contemporary we might arguably say that money is "borrowed into existence" through a process were both the meaning of "acknowledgement of debt" has changed, and were the (inter)state system through deregulation policies to some extent has "retracted" as a guarantor of value. If this holds true it can be measured to the extent in which states are failing to fulfill their role in bringing debt and credit into balance.

Furthermore, the banks not only produce money to lend to private companies and individuals, but also to governments. It is important to notice that this money creation logic is almost entirely privatized. The vast majority of the money supply is

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[162] In Keynes work "A treatise on money". For an illuminating map outline of Keynes's classification and evolutionary scheme of money forms se Hart (2000: 247).

[163] This discussion leaves the huge field related to the "the philosophy of money" relatively untouched. In general we might note that the development described here might in some senses be interpreted in terms of Keynes's classification of money forms and an "… evolutionary scheme emphazising the gradual replacement of an objective standard of value (commodity-money) with symbols of no intrinsic value (token or representative money)" (cf. Hart 2000: 247). This move was described as an evolution from *substance to function* by Simmel. Simmel also held that money provided stability in a volatile world of commodity exchanges, because of its feature as a common measure uniting independent acts of exchange. This idea has been described (in chapter one) as one key element of the "abstraction package" (abstract value) that constitutes the "infrastructure" of the modernization processes, which standardizes and thus commensurates cross-cultural communication.

created through accounting entries, by private commercial banks and central banks as *private* corporations,[164] lending to governments and private actors alike. In the US, for example, the only money created by the government is coins, comprising one one-thousandth of the total money supply. Moreover, as illustrated by the money supply figures, Federal Reserve notes (dollar bills) and government coins comprise together less than three percent of the money supply. 97 percent is created by private commercial banks (cf. Brown 2007). Money creation is indeed the most important product of banking. Similar arrangements apply for most western countries.

While this money creation logic at work at the core of the whole global capitalist social system might come as a surprise to some, these issues are well known for practitioners. For example Graham Towers, Governor of the Bank of Canada from 1935 to 1955 stated:

> ”Banks create money. That is what they are for… The manufacturing process to make money consists of making an entry in a book. That is all… Each and every time a Bank makes a loan… new Bank credit is created -- brand new money” (quoted in Brown 2007).

Likewise, Nathan Rothschild, a member of the famous Rotschild finance family allegedly stated in 1791: “Let me issue and control a nation's currency and I care not who makes its laws”.[165] A collection of quotes from a set of notabilities, assembled and presented by the controversial and ambitious 3,5 hours documentary film “The money masters”,[166] even applauded by famous monetarist economist Milton Friedman, highlights some of the issues at stake:

> “If the American people ever allow private banks to control the issue of their currency, first by inflation, then by deflation, the banks... will deprive the people of all property until their children wake-up homeless on the continent their fathers conquered… The issuing power should be taken from

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[164] Despite what its name connotes, the status of the Federal Reserve banks as “independent, privately owned and locally controlled corporations”, was confirmed for instance in a court ruling (Lewis v. United States, 680 F.2d 1239) in 1982. See Global Research, April 2, 2008 (http://www.globalresearch.ca/index.php?context=va&aid=8518, accessed April 2, 2008).
[165] Found in Prof. Rodrigue Tremblay, “Stagflation is here”, Global Research, January 31, 2008. See http://www.globalresearch.ca.
[166] See http://www.themoneymasters.com/

> the banks and restored to the people, to whom it properly belongs" (Thomas Jefferson).
>
> "History records that the money changers have used every form of abuse, intrigue, deceit, and violent means possible to maintain their control over governments by controlling money and its issuance" (James Madison, the main author of the U.S constitution).

Other quotes in the same vein are easily accessible, if not as easily sourced historically:[167]

> "Whoever controls the volume of money in any country is absolute master of all industry and commerce" (Former US President James A. Garfield).
>
> "Banking was conceived in iniquity, and was born in sin. The Bankers own the Earth. Take it away from them, but leave them the power to create deposits, and with the flick of the pen, they will create enough deposits, to buy it back again. However, take it away from them, and all the great fortunes like mine will disappear, and they ought to disappear, for this would be a happier and better world to live in. But if you wish to remain the slaves of Bankers, and pay the cost of your own slavery, let them continue to create deposits" (Sir Joshiah Stamp, President of the Bank of England in the 1920's, and then allegedly the second richest man in Britain).
>
> "Banks lend by creating credit. They create the means of payment, out of nothing" (Ralph M. Hawtrey, Former Secretary of the British Treasury).

Just before President Woodrow Wilson died, he is reported to have stated to friends that he had been "deceived" and that: "I have betrayed my country", referring to the Federal Reserve Act, which was passed during his Presidency.

To comprehend the extent to which the decoupling of the financial from the productive economy has developed today, we need to compare the description of the "financial casino" with measures of the productive economy. Is the dramatic increase in financial transactions and of the world money supply matched by a similar increase in

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[167] Taken from http://www.libertydollar.org/ld/press-kit/prominent-quotes.htm (November 2, 2007).

economic growth? An economic growth that might explain the demand for more means of payments to be injected into the economy?

Although having several profound problems, arguably our best measure of "real" economic production is the GDP (Gross Domestic Product, and variants like GNP). [168] The most widely accepted empirical work on long-term economic growth is that of Angus Maddison (2001: 126) made for the OECD (Organization for Economic Co-operation and Development). The work shows that the annual rate of growth in real global GDP fell from 4.9 percent in the period 1950-73 to 3 percent in 1973-98. Using another procedure of measurement the United Nations confirms the development when they estimate that the world GDP grew at an annual rate of 5.4 percent in the 1960s, 4.1 percent in the 1970s, 3 percent in the 1980s and 2.3 percent in the 1990s (cf. Crotty 2005).[169]

Another estimate calculates other figures, but illustrate the same overall trend. It show that the aggregate global growth rates has continued to fall since the 3.5 percent of the 1960s, to 2.4 percent of the 1970s, while the 1980s and 1990s displayed growth rates of 1.4 percent and 1.1 percent. It also states that this trend has continued in the years since 2000 (cf. Harvey 2005: 154). And these numbers do not take into account the surging global inequalities. Neoliberalized globalization has thus not delivered growth in real GDP. It has, instead, enabled a dramatic increase in the financial economy. Major regions of the world, many of them under so-called neoliberal "shock therapy" have seen catastrophic economic results. Only in East and South-East Asia, and to some degree India, has neoliberalization been related to positive growth records.

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[168] The inventor of GDP Simon Kuznets acknowledged the serious flaw in the GDP measure of not taking into account qualitative differences in growth, of not indicating "+ and –" of the growth accounting, and stated in 1962 that: "Distinctions must be kept in mind between quantity and quality of growth, between costs and returns, and between the short and long run. Goals for more growth should specify more growth of what and for what" ("How To Judge Quality", The New Republic, October 20, 1962). Likewise former Senator Robert F. Kennedy allegedly stated that: "The gross national product includes air pollution and advertising for cigarettes and ambulances to clear our highways of carnage. It counts special locks for our doors and jails for the people who break them. GNP includes the destruction of the redwoods and the death of Lake Superior. It grows with the production of napalm, and missiles and nuclear warheads..." (Measuring Progress: Annex 1-What's wrong with the GDP? Friends of the Earth, March 13, 2003).
[169] UN World Economic Survey, various issues.

Here, however, the developmental states of a not so neoliberal outlook have played a significant part (ibid.). The reason that the proportion of global poverty has fallen is almost exclusively due to the positive developments in China and India.

We may now compare the scale of the productive economy with that of the financial. Although the annual growth rates of real GDP has been steadily falling under neoliberalization, according to the World Bank the world total GDP of 2006 was approximately US $48 trillion.[170] US $36 trillion of those came from high income countries. This figure can then be compared with the US $7 trillion or so in *daily* turnover in the financial markets and an impression of both the decoupling of the productive and financial economy, and the imbalances are highlighted. Especially in light of an estimate that only approximately $800 billion a year would be required to sustain international trade and productive investment flows (Harvey 2005: 161).

As we have seen in the case of Hydro, however, they are also through various forms of derivatives, hedging, and even in taking up large debts to finance their projects, and thus subsequently enabling financial actors in creating huge amounts of virtual money, contributing to the expansion of the "financial casino". It is therefore far from straightforward to strictly separate that which is "pure finance" from the part that is directly linked to production. We might propose that all wealth origination is in the last instance linked to production (GDP), but to a larger or lesser extent. Metaphorically we might picture a pyramid turned upside down, with the production economy at the bottom, and ever expanding floors of wealth origination on top of it. Hydro is positioned fairly close the bottom, as it were, firmly grounded to the realities of nature and technology, and productive economic activities, but also contributes in inflating the more detached levels of finance capitalism above them. Other financial actors still, operate more or less exclusively in this "decoupled" and inflated area.

The Federal Reserve comments in September 2006 the relationship between the money supply and real economic performance thus:

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[170] World Development Indicators database, World Bank July 1, 2007.

> "For decades, the Federal Reserve has published data on the money supply, and for many years the Fed set targets for money supply growth. In the past two decades, a number of developments have broken down the relationship between money supply growth and the performance of the U.S. economy. In July 2000, the Federal Reserve announced that it was no longer setting target ranges for money supply growth".[171]

In this statement we can read some of the new relationship that connects money with debt in the contemporary. As desctibed above, in addition to the complete abandonment of the gold standard, the decisive role of the state in transforming private debt into standard means of payment (by bringing debt and credit into balance) seems to have become frailer or partly broken under the regime of neoliberal financialization.

The central banks are increasingly trying to manage the global economy solely by interest and inflation measures. The perspective is that as long as inflation rates are "reasonable", new virtual money can "soundly" be injected into the system. The problem here, of course, is that inflation is a result of a series of more or less autonomous factors, and not only dependant upon the "isolated" money supply of various countries currencies. In a globally integrated economy, were large parts of "the workshop of the world" has moved to Asia, especially China in recent years, the rise in cheap import keeps the purchasing power strong in the import countries (the rich countries), even in the face of huge increases in the money supply. The inflation driving mechanism of the dramatically increased money supply is masked, and thus kept in check for the time being at least, by the exploitation of cheap labor and natural resources from developing countries, which produce cheap products for the rich countries to purchase.

Another confusion is the notion that the money supply is increased because of the "demand" for means of payments, liquidity, by the market. This contention is difficult to maintain in light of the statistical data we have presented above. The growth in the money supply is not at all correlated with the economic real growth measures like GDP. It is, rather, contingent with the dramatic increase in pure finance transactions and

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[171] See http://www.newyorkfed.org/aboutthefed/fedpoint/fed49.html (December 1, 2008).

activities in the financial markets. Thus we have a self-reinforcing process, whereby the growth in the financial markets create an ever increasing demand for more liquidity, which in turn drives the financialization of the economic system, which in turn create more demand for liquidity. A spiral of enchantment, as it were.

As several authors have noted, our contemporary predicament is a "casino culture", fuelled by a finance capitalism that fosters the notion of speculation and gambling. A casino capitalism (Strange 1986). For example Comaroff and Comaroff put some of the recent trends together; "… the explosion of popular gambling, its legitimate incorporation to the fiscal heart of the nation-state, the global expansion of highly speculative market "investment", and the changes in the moral vectors of the wager". Then they ask what has happened? They answer by way of paraphrasing a reflexive Fidel Castro: "'The world has become a huge casino.' He [Castro] refers to the fact that the value of stock markets has lost all grounding in materiality and has as such finally realized the dream of medieval alchemy: 'Paper has been turned into gold'" (Comaroff and Comaroff 2000: 297).

Applying the same metaphor it is rather abstract money digits that have been turned into gold, we might add. As Hardt contends, the gaming room has become iconic of capital, of its "natural" capacity to yield value without human input (1995: 39). Jameson (1997) proposes that finance capital brings into being a play of monetary entities that need neither production nor consumption. As the historical constant of deep, recurrent financial crisis testifies (cf. Arrighi 1994; Appendix II), however, there is no such thing as capitalism without production; and thus the neoliberal, and by implication the neoliberalized social theories stress on market mechanisms (supply and demand, consumption, circulation and exchange) as the key in economic value considerations is deeply problematic. The chapter will conclude with some of the social implications of neoliberal financialization both nationally and globally.

The "ancien régime" reinvented

It is by now documented that it is highly doubtful that neoliberalism has contributed to "real economic growth" in any reasonable sense of the expression. Rather, as described above, and as put forward as the central thesis of scholars of neoliberalism (cf. Harvey 2005; Duménil and Levy 2004; Epstein 2006); neoliberalism constitutes the remaking of world economies and societies in the image of restoring elite class revenues and power. The elites in question are those collectively referred to as "finance", whose power was partly lost in the Great Depression, during World War II and the post-World War II order. A glimpse of the heights of their former power, and an anticipation of the temporary loss of it, is highlighted in a letter from Franklin D. Roosevelt to Colonel E. M. House in 1993: "The real truth… is, as you an I know, that a financial element in the larger centers has owned the Government ever since the days of Andrew Jackson" [the 7th President of the US from 1829-1837].[172]

Let us use some key statistical measures to identify the "world society" in terms of economic distributions. In 1989 there were 66 billionaires and 31.5 million people living below the poverty line in the US. In 1999 the number of billionaires had increased to 268 and the number of people below the poverty line was now 34.5 million. This same year, at the height of a decade long economic boom, one in six American children was officially poor and 26 percent of the workforce earned poverty-level wages. And during the same decade, not surprisingly, stock market gains went mostly to the wealthiest (Mintzberg et al. 2002: 72).

In Norway a similar trend has emerged, only later. In the years from 2003 to 2007 the number of billionaires in Norway increased from below 50 to above 150. In only one year, from 2006 to 2007, the 400 richest people in Norway, holding values of approximately 762 billion NOK, increased their wealth with 168 billion NOK.[173] As Hallvard Bakke, a former minister of Norway, and commentator in the debate noted,

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[172] Quoted in P.D. Scott, *The Road to 9/11: Wealth, Empire, and the Future of America*. University of California Press, 2007, p. 1.
[173] See the popular Norwegian economics journal "Kapital", Vol. 37(16), September 2007.

while in 1990 the ten percent of the population with the highest incomes acquired 19 percent of the total incomes, the percentage had increased to 24.5 in 2003. This percentage increase amounted to 70 billion Norwegian Kroners (a bit more than one billion dollars).[174] That means, if the 10 percent people with the highest incomes still had accounted for "only" 19 percent of the total incomes also in 2003, they would have earned 70 billion NOK less than they actually did in 2003. This trend was also connected to an increase in the amount of poor people in Norway. Although judging by rhetoric it is difficult to believe that in "the worlds richest country", a favorite expression among politicians of parties across the political spectrum, there is a significant portion of poor people. Statistics indicate that 11 percent of the population live below the limit of what is defined as poor according to the definitions provided by EU.[175]

These trends in the US and in Norway are, however, far from unique. Looking at wealth distribution in a global perspective, the statistics unequivocally illustrates the present predicament. The authoritative reports on global inequalities from the United Nations Development Program draws a depressing picture (UNDP Human Development Report 2005).

In 1998 the world's 225 richest men owned more than one trillion dollars, the equivalent of the total income of the worlds 47 per cent poorest people. Three of them holding assets that are more in worth than the forty-eight least developed countries. In terms of consumption, Hart contends that: " World consumption has increased six times in the last twenty years; but the richest fifth account for 86 per cent of it" (2002: 28). The striking asymmetries in the global income distribution can be pictured, somewhat ironically, like a champagne glass. Using numbers from year 2000, the richest 20% of the world's population holds 75% of the world's total income. The poorest 40%, the roughly 2 billion people living on less than $2 a day, hold 5% of world income. Looking at the poorest 20% of world population, the roughly 1 billion living on less

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[174] Klassekampen, November 17, 2006.
[175] Peder Martin Lysestøl, Klassekampen November 15, 2006.

than $1 a day, they hold 1.5% of the worlds total income (UNDP Human Development Report 2005: 36). Indeed a metaphor of a "champagne culture" seems to be appropriate.

To put the asymmetries in perspective, we can look at the cost of ending extreme poverty, as stated by the UNDP: "Measured in 2000 purchasing power parity terms, the cost of ending extreme poverty – the amount needed to lift 1 billion people above the $1 a day poverty line – is $300 billion" (UNDP Human Development Report 2005: 38). This amount, like the report underscores, is equivalent to less than 2% of the income of the richest 10% of the world's population.

As clearly demonstrated by the UNDP reports, also the gap between the richest and the poorest countries is increasing dramatically. It has been estimated that in 1750 the rich countries were twice as rich as the poor (Reinert 2007: xvii). As Fulcher further notes: "In 1820 the five richest countries in the world were three times as rich as the five poorest. By 1950, they were 35 times as rich; by 1970, 44 times; and by 1992 72 times" (2004: 98).

In the rhetoric of "economic globalization" it is easy to jump to the false conclusion that the world economy is converging and that it is integrating the world, when in fact: "The world has become steadily more *divided* by international differences in wealth" (Fulcher 2004: 98). Indeed, Hart compares the contemporary world situation in terms of economic inequality with that of the *ancien régime* in France during the 1750s, at the centers of agrarian civilization before the modern revolutions of political struggle and economic development swept them away (2002: 27).

Monetary imperialism

A more overlooked issue, possibly due to the intellectual hegemony of neoclassical economic theories, and especially the Chicago school monetarists, is the redistributive effect caused by the increase in money supply. As Rothbard contends: "… the big error of all quantity theorists, from the British classicists to Milton Friedman, is to assume that money is only a "veil", and that increases in the quantity of money only have

influence on the price level, or on the purchasing power of the money unit" (1994: 25). According to Rothbard, Friedman's fallacy is the notion that the increase in money supply and the subsequent dilution of the money unit is somehow magically "showered" by a "helicopter effect" symmetrically and instantaneously on every person proportionally to his or her money stock. On the contrary, Rothbard explains, owing the insight to the eighteenth century Irish-French economist Richard Cantillon and the Austrian School economists to which he himself belongs, that, in addition to this quantitative effect, "… an increase in the money supply also changes the distribution of income and wealth" (ibid.).

This occurs because the effect of the increased money supply does not magically affect everybody at the same time, but rather, "ripples through the economy" in a process transmitting the new money "from one pocket to another". Because it is a process in time the compound effect is that: "Wealth then moves to those market participants who gain early access to this newly created fiat money. Who loses? Those who gain access to this fiat money later in the process, after the market effects of the increase of money have rippled trough the economy" (Gary North, Foreword to Rothbard 1983: 6). Thus, also the dramatic increase of the money supply reproduces elite power relations by redistributing wealth *upwards* in the system.

On the level of global money flows and the management thereof, there is one further highly relevant, and seldom acknowledged, consequential implication in terms of the reproduction of asymmetrical relations. As outlined in detail and depth by Michael Hudson (2003), independent Wall Street financial economist and Distinguished Professor of Economics and the University of Missouri, and popularly summarized by Niall Ferguson, Professor of History at Harvard University (2005); the monetary system of today works in effect as an imperial tool for the United States. This came about since the adoption of the "U.S. Treasury bill standard", the dollar as the key world reserve currency, since the late World War II, and the inception of a worldwide monetary logic based on dollars through the "Washington consensus" (IMF, World Bank, US Treasury Department). Complementary to Eisenhover's concept of the "military-industrial

complex" this system has been labeled the "Wall-street-Treasury complex" by noted international economist Jagdish Bhagwati (2004). Also, this dollarized monetary logic has been hardwired into the worlds domestic economies through global trade, capital markets and central banks interlinked in international economic relations. One of the effects has been that other nations has been paying huge "empire tributes" to the United States. Since the 1970s, and the complete abandonment of the gold standard, the US has even been able to rule in a position not as world creditor, but as world debtor. As referred by Ferguson, Nixon's Treasury Secretary once told his European counterparts: "… the dollar is our currency, but your problem" (op. cit.).

Like I have described earlier, the US economy is running and accumulating huge debts, a current account deficit in the range of six percent of GDP and net external debt of about 30 percent, in the form of "twin deficits"; that is both the budget deficit (the difference between federal tax revenues and expenditures) and its balance of payments deficit (the difference between what Americans earn from foreigners from exports, services and investments abroad and what they pay out to foreigners for imports, services and loans). When a government runs debt it can tap public savings by selling government bonds. However, as Ferguson notes: "Perhaps the most amazing economic fact of our time is that between 70 and 80 percent of the American economy's vast and continuing borrowing requirement is being met by foreign (mainly Asian central banks)" (ibid.). In political terms this means in effect that the US administration's combination of tax cuts and "global war in terror" is to a large extent financed by other countries.

Paul Craig Roberts, the Assistant Secretary of the Treasury in the Reagan administration and former Associate Editor of the Wall Street Journal, puts it like this:

> "The macho super patriots who support the Bush regime still haven't caught on that US superpower status rests on the dollar being the reserve currency, not on a military unable to occupy Baghdad... When the dollar ceases to be the reserve currency, foreigners will cease to finance the US trade and

> budget deficits, and the American Empire along with its wars will disappear overnight".[176]

The US government multibillion-dollar excess expenditure is thus to a large extent a free ride on the global monetary system. China and Japan are the foremost owners of US debt, denominated in government bonds, debt the US have no means or intention of paying back. Opposite to the way Britain ruled the world economically in the third "systemic cycle of accumulation" (Arrighi 1994; Appendix II), by taking responsibility for keeping the international financial system in order, the US use it from a debtor position to fund its increasing debt.

Also Norway plays a role here, having become a substantial world creditor, especially through the former oil fund, now called the pension fund abroad. In 2006 it held values of about 2 trillion NOK (2000 billion NOK). In 2006, 40 percent of the values were invested in stocks and 60 percent in rent instruments, mostly government bonds. Of the stock investments 30.4 percent was invested in US stocks, and for the bonds, 32.6 percent of these values were invested in US rent instruments, that is, mostly treasury bonds.[177] Thus, roughly 400 billion NOK in 2006 invested in US government bonds. This is to say that Norway is in part financing the US deficit, and by implication its free ride, by about 400 billion NOK. In this way, troubling to the moral idiom of Norway as a "peace nation", it is indirectly financing the US military spending in the war in Iraq and the so-called global "war on terror". In fact, Norway is in this line of argument arguably Europe's biggest financial contributor to the illegitimate war in Iraq.

As Arrighi (1994; Appendix II) and others has shown, however, all earlier capitalist empires have collapsed, and they have done so in periods of extensive "financial expansion" of the economy. In periods resembling that of contemporary millennium capitalism. How long the US can sustain its debtor positioned political and economic hegemony, remains to be seen. Today the fear in Asia and Europe is that

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[176] Paul Craig Roberts, "Dollar's Fall Collapses American Empire", Information Clearing House, 11.08.07 (http://www.informationclearinghouse.info/article18686.htm).
[177] See Norges Bank pension fund reports (http://www.norges-bank.no/Pages/Report____65164.aspx).

changing the financial and payments system, "getting off the dollar", would harm their own economies to a great extent as well. Removing the monetary imperialism of today would, they fear, crash the whole system as long as the whole system is upheld by what Hudson calls a "superstructure of dollar debt" (ibid.: 387). As history's lesson show, however, it is when you're your power wanes that owing a fortune in your own currency, like the US does today, become a real problem for yourself. That is, as opposed to being a problem for someone else. The question for the creditor nations is to calculate when the problems of the current financial system outweigh the problems of changing it.

Redistribution neoliberal style

Thus the most substantive contribution of neoliberal financialized globalization since the 1970s; from the "finance capital" takeover to the inherent workings of the present monetary system itself, is thus the *redistribution* rather than the creation, of societal wealth and real incomes. The redistributive mechanisms performed under neoliberalization have been described by Harvey as "accumulation by dispossession" (2000, 2005). They are seen by Harvey as the continuation and proliferation of a set of accumulation practices comprising four main features: 1) Privatization and commodification, 2) Financialization, 3) Management and manipulation of crisis, and 4) state redistributions. Some of the more specific redistribution practices included in the concept of "accumulation by dispossession" are the following:

> "… the commodification and privatization of land and the forceful expulsion of peasant populations…; conversion of various forms of property rights (common, collective, state, etc.) into exclusive private property rights…; suppression of rights to the commons; commodification of the labor power and the suppression of alternative (indigenous) forms of production and consumption; colonial, neocolonial, and imperial processes of appropriation of assets (including natural resources); monetization of exchange and taxation, particularly of land; the slave trade…; and usury, the national debt and… the use of the credit system as a radical means of accumulation by dispossession… [and] extraction from patents and intellectual property rights and the diminution or erasure of common

> property rights (such as state pensions and, paid vacations, and access to education and health care)…" (Harvey 2005: 159).

The state, with the judicial systems definition of legality and the brute force entailed in its monopoly of violence is both backing and promoting these processes, Harvey argues.

The wider implications of the "debt trap" are outside the scope of the present presentation, however the effects of debt and compound interests must be mentioned briefly. The "magic of compound interests", as one of the Rockefeller's allegedly once phrased it,[178] is more "tragic" for most of the world population. As Ellen Brown writes: "The debt trap snapped shut for many countries in 1980, when international interest rates shot up to 20 percent. At 20 percent interest compounded annually, $100 doubles in under 4 years; and in 20 years, it becomes a breathtaking $3,834.66. The devastating impact on Third World debtors was underscored by President Obasanjo of Nigeria, speaking in 2000 about his country's mounting burden to international creditors." What he said was the following:

> "All that we had borrowed up to 1985 was around $5 billion, and we have paid about $16 billion; yet we are still being told that we owe about $28 billion. That $28 billion came about because of the injustice in the foreign creditors' interest rates. If you ask me what is the worst thing in the world, I will say it is compound interest."[179]

In this assertion Einstein accompanies him. Einstein was supposedly once asked if there could exist anything more powerful than the atomic bomb. He is said to have answered the following: "How about compound rents?"[180] What is well documented, is that from the 1970s two of the performing arms of the "Wall Street-Treasury complex" (Bhagwati 2004), The World Bank and the International Monetary Fund, began imposing a set of

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[178] Noted in a lecture at the conference "Financial Crises in Capitalism", Sørmarka Conference Center, Oslo, Norway, 08.27.07

[179] Ellen Brown, "Behind the Drums of War with Iran: Nuclear Weapons or Compound Interest", Global Research, November 13, 2007.

[180] Erik S. Reinert, introduction lecture at the conference "Financial Crises in Capitalism", Sørmarka Conference Center, Oslo, Norway, 08.27.07.

”conditionalities” on loans to poor debtor countries, requiring them to open up their capital markets, cut spending on social welfare, and privatize their industries.

Whatever possible other benign motives these policies might have had, only in this way, the lenders got their interests. Joseph Stiglitz, former chief economist of the World Bank and winner of the so-called noble prize in economics, has extensively criticized these conditionalities from an insider perspective (2002). For example, he describes the TRIPS (WTO’s intellectual property rights treaty) as ”condemning people to death”, and the World Bank plans as ”undermining democracy” (cf. Palast 2003: 155). The developing countries that has escaped these steps ”to economic damnation”, as Palast has described them, have largely done so by not adopting their measures (ibid.: 150; Reinert 2007). According to Brown, by 2001:

> ”… enough money had flowed back to First World banks from Third World debtors to pay the principal due on these loans six times over; but interest had consumed so much of those payments that the total debt actually quadrupled during the same period. In 1980, median income in the richest 10 percent of countries was 77 times greater than in the poorest 10 percent. By 1999, that gap had grown to 122 times greater. In December 2006, the United Nations released a reported titled “World Distribution of Household Wealth,” which concluded that 50 percent of the world's population now owns only 1 percent of its wealth, while the richest 10 percent of adults owns 85 percent. Under current conditions, the debts of the poorer nations can never be repaid but will just continue to grow” (op. cit.).

In Islamic banking and finance there exists a full-fledged alternative to usury and a debt based economy, and fractional reserve banking and money creation. This system is described by for example British expert in Islamic finance El Diwany (2003). In a presentation at Cambridge University in 2002 he referred to a United Nations Human Development Report from 1997, which wrote that debt relief in Africa alone would save the lives of about 21 million children in three years. El Diwany is quoted saying:

> “The UNDP does not say that the bankers are killing the children, it says that the debt is. But who is creating the debt? The bankers are of course. And they are creating the debt by lending money that they have

> manufactured out of nothing. In return the developing world pays the developed world USD 700 million per day net in debt repayments."[181]

The cultural formations created by the wide-ranging program of neoliberal change have by the anthropologists Holmes and Marcus been referred to as "fast-capitalism" (2005: 238): "We have argued that the most distinctive feature of fast capitalism is its propensity to subvert the science, political economy, and metaphysics of solidarity upon which modernist conceptions of society rest" (ibid.: 238). The irony in our case with Hydro is that, while they in some respects struggle to resist and overcome the cultural formations that are produced under neoliberal financialization, to counter the subversion of the social, they are simultaneously adding "to the financial casino" themselves, mostly by the rhetoric and practices of "risk management". They are thus fuelling the "fast financial capitalism" while simultaneously working to subvert it through their tenacious main corpus of production practices. In a similar vein Comaroff and Comaroff identifies and explores three key corollaries of "millennial capitalism": "… the shifting provenance of the nation-state and its fetishes, the rise of new forms of enchantment, and the explosion of neoliberal discourses of civil society" (2000: 293).

In the "enchanted" economy of appearances, signs of finance have moved to the center of the value creating processes of capitalism itself. In the final part of the dissertation, some other but related aspects of this shift are explored.

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[181] Quoted in Ellen Brown, "Behind the Drums of War with Iran: Nuclear Weapons or Compound Interest", Global Research, November 13, 2007.

PART IV

IN THE COMPANY OF SIGNS

Chapter Nine

9. "Incarnation Inc.": Idioms of Id-entity Invention and Rhetorics of Representation

Construction is a sublime male poetry.
(Camille Paglia 1990: 38)

... branding may require the development of new concepts, especially that part of the process when the sign tends to engulf the product it initially sought to bring to our attention.
(Tord Larsen 2008: 219)

After being driven in a new General Motors car through the cast iron gates of the Xi'an plant for the first time, and guided upstairs to the management floor, the immediate thing I noticed, in addition to a weak smell which I later learned came from recurring sulfur dioxide leakages caused by a weakness in the plant design made by the investment project (see chapter five), was the huge posters hanging on the walls. The striking thing about the posters was that they praised Hydro in a way I had never seen before. They ranked Hydro as a performer in the business world. On a white poster with a background picture map of China, and beneath the Hydro logo and the heading "Norsk Hydro Core Business: Oil & Energy, Aluminium and Agriculture" one of the posters read:

- No. 1 mineral fertilizer company in the world
- No. 1 magnesium producer in the world
- No. 3 integrated aluminium company in the world
- One of the largest oil & energy companies in Norway
- Global Fortune 500 company
- 53,100 staff worldwide
- Listed on stock exchanges in seven countries including London and New York
- Turnover: US$ 17-20 billion

I found an almost identical poster in Hydro's Representative Office in Beijing, and learned that it was Jung, also one of the former GM's in Xi'an, who had initiated the making of the posters. "It was very difficult to find particularly useful information about Hydro at the time of the Xi'an project," she said. "We wanted to tell the new employees about Hydro, to show that Hydro is a big, international company. We found little that could be used directly, and had to make the posters locally". An example of the need for the posters was noted by many of the local managers, and also by the expats, that it was very important that Hydro was a Fortune 500 company. Being a big company was seen as a strong advantage in attracting a motivated and competent workforce.

As fieldwork unfolded I became increasingly fascinated by both the centralized and local, concerted and emergent, efforts of communicating and *expressing* the cultural aspects of the company both internally and externally. One of the centralized and major

initiatives to this end is the so-called "Hydro Way". In conjunction with Hydro's growing internationalization, especially through its 2002 acquisition of the major German international aluminium company VAW, lifting Hydro to become the world's third largest integrated aluminium company, Hydro top management realized the increasing requirements put on its managers and employees to be able to maneuver and move between many different cultural and knowledge traditions and a variety of organizational environments and circumstances. On this background, and more of which is discussed below, top management highlighted the importance of value integration in the enabling of a purposeful Hydro community. "The Hydro Way" was the answer to the challenge. Value integration as a major means of sustaining purposeful communion in the face of diversity is noted in the literature on knowledge regimes in the knowledge economy (cf. Sørhaug 2004: 323). As such the "Hydro Way" constitutes an ambitious effort of "managing meaning" and culture in a diverse cross-cultural context as the Hydro corporation constitutes.

By analyzing various corporate communicative material, instantiated and disseminated through different media, I will in this chapter seek to describe some of the particularities of the Hydro corporation's communications material and rhetoric related to cultural construction and identity invention. In the next chapter I will seek to compare these efforts with other relevant ethnographic material that signify by other means than language. The present chapter has two main parts. In line with my outline of an "anthropology of knowledge work" (see chapter two), the subsequent material adds to the presentation of Hydro projects', and by implication the wider social relations networks in which they are intertwined, corpus of substantive assertions and ideas about aspects of their world. In addition to representing some of Hydro's own deliberate efforts of communicating "who they are" and "what they do", in itself a significant collapse of distinctions, the first part is warranted especially by bringing to the table additional variety in the forms of expressive media in which these ideas about the world are instantiated, communicated and disseminated as partial representations and enactments. It focuses first on Hydro's own substantial means and efforts of

representing and reconstructing themselves, both to internal and external audiences, by means of various language-based idioms. Thus I want first to elaborate upon some of their explicit "communications", "profiling", and "branding" media material, like brochures, posters, advertising, pictures and promotion films, and not the least how the major "Hydro Way" program, which inscribed the guiding principles for all of this material, was brought forth.

In correspondance with the analysis presented earlier in this thesis, for example the exploration of conceptions and practices related to "technology" understood to a large extent as culture's aims at interpretation and mastery of *both* nature and culture; the "communications" efforts analyzed in this part is, in line with Wagner's analysis of culture (1981), seen as undertakings aimed at direct interpretation and mastery of their own *cultural* processes, practices and images. As such it an example of aspects of both Gell's *technology of production* (in its production of signs, i.e. communication) and the *technology of enchantment* (its rhetorical practices) (see chapter five). The practices of managing Hydro communications, were Hydro is seen as a whole, a corporate body, is thus also a form of managing signification, and on behalf of the Hydro legal person a type of impression management through various forms of power-laden processes. Chief among these processes is the control of information flows, and efforts of symbolically attracting and reassuring "stakeholders" (shareholders included) to legitimize their role in various economic and societal communities and contexts (cf. Hall 1979). It further illustrates the necessary focus on ontological aspects in studies in anthropology (as argued in chapter three and six).

Value integration the "Hydro Way"

When we visited Suzhou for the first time, the new "Hydro Way" communications material had been produced and distributed, also in Chinese. Everybody I talked to locally was very positive about the material. They had read it and praised Hydro for making it available to them. In particular they were impressed and felt motivated and

could identify with the values Hydro promoted. When talking about values they referred variously to different elements of the "package" that comprises the "Hydro Way". As outlined in the quite extensive 30-page brochure "Hydro Way – the principles and believes we live by", it is written: "The Hydro Way is built on a solid foundation: the four talents of our company, our mission and our values" (p. 4). In a newer, updated and more compact version, The Hydro Way is defined somewhat differently, as "our way of working".[182] In China, Herman, the GM of one of the plants there, he discussed the Hydro Way in relation to his newly hired Chinese organization and employees:

> "You know, they have strength. How do you call it, they are very enduring. You can give them five days manuals to read. They read five days. What we won't do, what nobody will do. Or sometimes, on the other hand, I think, what do they do the whole day? You know. They study, and study, and study. They really study. If you give them the Hydro Way, this brochure. I see some of the people. They really, really are reading this, and translating into Chinese, and they are willing to work very deep in detail. Very down to the details."

It was the original version that was distributed throughout the world, translated and in paper version. The elements of the "Hydro Way foundation" are described in the following way: "Hydro's mission is to create a more viable society by developing natural resources and products in innovative and efficient ways". What they call their "institutional talents" are described after asking the question; "What are the talents at the root of who we are?" Their answer is fourfold. "An ability to develop source business; A drive to optimize; An instinct to commercialize; A passions for social commerce". Finally, the Hydro values are determined as "Courage, Respect, Cooperation, Determination and Foresight." All of the elements are elaborated upon and illustrated in the brochure by examples from their business operations.

In the new version, from 2007, the same mission and values are listed, but the talents are somewhat changed. They are now described as in the Hydro poster below.

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[182] This version can be found here: http://www.hydro.com/en/About-Hydro/The-Hydro-Way/ (October 15, 2007).

Figure 41. The 2007 version of the main elements of the "Hydro Way – our way of working" (Source: Hydro).

The change in the language of the talents was arguably an appropriate one. When talking informally about the Hydro Way and their talents, many experienced managers and experts expressed that they did not know their meaning, while having some vague ideas. The phrasings were strange. Several also found the whole endeavor of "branding" the Hydro culture unfamiliar. As Sigurd, one of Hydro's premier technological experts, once stated during lunch at one of their plants. The Norwegian original statement is included, because it is sadly impossible to translate the dialect idioms and the whole cultural flavor of the comment into English:

> "Yes! The Hydro Way. My God, on behalf that stuff one could easily crack two jokes or ten. That's for sure… But, somewhat to the contrary, if one

> starts thinking through what it means, what it means to each and everybody, then an hour around the lunch table passes quickly". ["The Hydro Way ja! Dæven derre greian der e det lætt å slå både to og ti vitsa om. Det ska vær sekkert. ... Men itj for det. Viss en bynjje å tænke gjænnom ka derre betyr for nokka, ka det betyr for kvær og ein, ja da slår en fort ihjæl en time rundt lunsjbordet."]

Hans, another major corporate manager, and "owner" of several of their plants, ridiculed the whole Hydro Way effort. "Writing down the Hydro culture in this way is futile. You cannot export culture like that. It is only when these things are discussed and implemented locally that they have any meaning. When everybody ask what it means for their particular job, for their tasks and activities. If this is done, this whole Hydro Way business may have an impact." The Hydro facilitators responsible for the Hydro Way program were also self-critical in this respect. As one of them said: "One area were we could have done a better job, is in implementation of the Hydro Way. To facilitate processes to include the Hydro Way in daily local work". As my impressions accumulated, the Hydro Way was indeed discussed locally, not the least in the China projects and plants. Related to this, another favorite internal critique of Hydro by its own managers was that "way too much work is spent on internal processes". Hans, for example, once came back to China from a top managers summit in Europe:

> "A German style ruled that meeting, four days in a mediocre town hotel. The awards dinner lead us normally to outstanding places with a very formal dinner, but this time we stayed at the base floor of the hotel too. Since one week I am back and "brainwashed", back in China, but instead of charged batteries, at least mine seemed more on the half empty side. Why? I think that we Hydro managers are too much occupied with internal programs or initiatives, so that we have no time to make business with customers."

One of the corporate top managers put the whole Hydro Way into perspective.

> "When we grow mostly abroad, when most of our employees are non-Norwegian, and Hydro increasingly becomes a global company we need to enable better communications, improve at identifying and communicating what our values, our way of doing things are. Because still Hydro is also Norwegian based, and that inheritance we want to preserve."

At one of their intranet ”netcafés”, were top managers occasionally meet the whole organization “online”, and answers questions about issues of importance to the employees, by means of a web-based “chat-tool”, the Hydro Aluminium President answered a question concerning Hydro culture and values in a global context in the following way:

> ”When we developed the Hydro Way, we based this on both our Norwegian heritage and experiences from our units with strong roots in local communities. The Hydro Way is the glue in the organisation, and through our interaction within the sectors and business units, we develop the Hydro Way further. We emphasize the rotation of people across the organisation as carriers of culture. Another tool is the Best Practice Systems to better share and develop our experiences and practices. In addition, we have Leadership Programs to strengthen our organization and the way we operate.”

Both in Xi’an and in Suzhou the local “human resource managers”, notice the term and how it implies human beings seen as knowledge resources, and also the instrumentalization of relations in the vein of Heidegger’s analysis of technology as a “standing reserve” (see chapter five), conducted quite extensive programs of “cultural education”. Using a variety of forms of quizzes, competitions, and reward schemes, the employees learned extensively about Hydro, Hydro managers and managing styles, Norway, Norwegian culture and Norwegians. As one of the Norwegian expats stated: “I am confident that by now these Chinese employees knows a lot more about Hydro history than most of our employees back home in Norway. They are very much thorough in their approach to these softer issues.”

The HR-manager at one of their Chinese plants, for example, wrote a 20 page socio-cultural analysis, aimed for Chinese employees in Hydro, covering issues like; the history of Norway and the Nordic countries; national culture and ethnicity of Norway, including socio-economic data. One subheading concerning Norwegian national culture read: “A shy, distant and reserved people”, and noted Norwegians “closeness to nature”, the “simple and austere life”, egalitarianism, social problems like suicide rates, and nationalism. Norwegian social norms were covered, including “formality”,

“punctuality”, “informal dressing style”, “quick returns on favors” and “telephone use”. Norwegian managerial culture was described with key words like “little hierarchy”, “participative style”, “efficient goal setting and planning”, a “discussion and dialogic based decision making process”; and while being “ill at ease with conflicts”, they are resolved in a “civilized manner, having recourse either to the organization or to politics”. The leadership style is described as being “involved in his or her team's work”, as “non-directive”, and valuing “interactive facilitation, supportive behaviour and personnel development”.

The style is moreover “often quite apologetic about putting themselves into leadership positions”. Further, the communication style in Norway is described as “introvert”, emotions are not shown, but they may nevertheless “want to express themselves timely and precisely”. Describing the communication culture in Norway the report states that: “In Norway, there is by many people, at least engineers, a profound scepticism towards all forms of shallowness and superficiality. This sometimes gives Norwegians the reputation of not easy to feel at ease in social situations, and lack of sophistication for many visiting foreigners.” Memos are written in a “direct” and “non-ambiguous” style. They are using informal titles and are “deal focused”. While working with Norwegian colleagues it is recommended to be: “direct and honest”, “make plans before actions”, and “abiding deadlines”, “be honestly humble, do not boast”, to be “patient”, “participative”, and “punctual”, to engage little in “small talk in the office”, and to avoid “topics pertaining to social status”.

The incidents with the posters, their contents, the lack of “appropriate” information material about the wider Hydro values, perspectives and operations, in the early phases of their China endeavors, and subsequent local interpretations, made for interesting reflections about the Hydro corporation’s communications and impression management, and thus, their “presentation of self”. However bizarre this conception might sound, it should be a rather simple observation that the instrumental form of social organization we call ”the corporation”, which it by now has been well established was conceived with the legal rights of a person, is also in want of an “identity”. In our

contemporary world the "identity" of a corporation is designated a "brand". Hydro has even won prestigious awards for its branded "identity". Exploring this intriguing situation was a starting point of this chapter's descriptive discussion. How can we come to understand some aspects of a corporation as its "identity"? How are processes of "branding" becoming key constitutive activities for integration and communication? I will discuss further Hydro's corporate rhetoric of representing themselves as an objectified cultural whole, as an "id-entity", produced at the basic level arguably through what Larsen calls "acts of entification", whereby "… something inchoate congeals into a thing (Latin: *ens*), a unit, a category with discernible boundaries" (2008: 203); and their contemporary efforts of re-inventing and reproducing this identity through mastery and interpretation of their own cultural idioms through technologies of production and enchantment.

Paving the Hydro Way

The "Hydro Way" communications material and platform was intentionally created for conveying "our way of working" and "who we are", and was brought forth through an extensive so-called "brand process" throughout Hydro. It was conducted with the aid of the prestigious New York based "siegelgale" consultancy company.[183] Based upon extensive Hydro executive interviews, focus group interviews throughout the global organization, and surveys of Hydro internal audiences, in addition to gathering viewpoints from customers, partners and suppliers, siegelgale presented a total "communications platform". Siegelgale was chosen, according to the Hydro facilitator for the process, because she felt they "had to go to London or New York to get a consultancy that was global enough in its approach and outlook, to encompass and represent the whole of the globalized Hydro organization".

Although the final presentation found strong resonance with the 200 top managers that were present at the first "launch", there were subsequently considerable

[183] "Clarifying the Potential of the Norsk Hydro Brand", Internal report, Hydro & siegelgale, 2003.

discussions about some of the chosen values and talents among top management. For example had siegelgale proposed "discipline" as one core value, but it was later changed to "determination" before the Hydro Way was officially launched. The Hydro facilitator was sorry for this change, because she felt "discipline" was something that captured the Hydro culture and norms adequately. However, the top managers argued that it associated forms of authority they did not feel comfortable with, and with which they did not want to be identified. The proposed value "collaboration" was also changed into "cooperation" before the official launch. The facilitator regretted also this adjustment, because she contended that "cooperation" signaled a more weak and non-binding form of "collaboration".

As we have seen, the phrasings of two of the four "talents" were changed in their comprised 2007 version of the Hydro Way. Nothwithstanding, the "brand" platform was disseminated strongly throughout the company, and it ringed through both for "newcomers" in China as well as for the experienced "sly foxes" of the company, although the latter cracked many a joke on its behalf.

As indicated above, a variety of different premises instigated the brand process. One was Hydro as an increasingly global, or "glocal" (Robertson 1995), actor, another the need for identifying a common foundation to legitimize the conglomrate of three main businesses in one company (fertilizers, oil and energy, and aluminium), while a third important impetus was the view that three external factors "pushed" Hydro to re-define itself. In the words of the siegelgale report:

> "Three external forces have conspired to put Hydro at a crossroads, where the company must take a fresh look at how it will create value in the future.
> 1. *A more demanding shareholder* places pressure on Hydro to emphasize profits first, which calls into question traditional values
> 2. *The trend to internationalize* challenges Hydro as a Norwegian institution
> 3. *A growing sustainability imperative* defies Hydro to live up to its stated commitment to economic, social and environmental responsibility" [italics in original].

After analysis backed by empirical data, illustrated by quotes from Hydro managers, the four "institutional talents" referred to above, was outlined and rationalized in the report.

I will present a few statements and quoted illustrations of each of the talents. Unquoted statements below is headlines or bullet-points of analysis or declarations made in the report.

> ”Talent #1 – A bias towards developing “source businesses.”
>
> Hydro is drawn to businesses that govern the creation of future value and which have a fundamental, rather than an incremental, influence on society:
> Oil & Energy plays a role in governing the worlds’ fuel supply.
> Agri plays a role in governing the development of the world’s food supply.
> Aluminium plays a role in governing the production of durable goods.
> Certain values, endemic to Norway, contribute to Hydro’s natural inclination to nurture source businesses:
>
> - A long term view—Hydro tends to measure value over time rather than overnight [Value one].
> “We have a problem with anything that requires an immediate decision, or where the outcome is simply expedient.”—*O&E Executive*
>
> - Seriousness of purpose—Hydro people take their work, and the company’s role in society, seriously [Value two].
> “Working at Hydro, you have an understanding that what you are doing is important. It makes a difference, everyday, in the lives of millions of people.” —*Agri Employee*
> “Hydro would never manufacture something like toothpaste. It just wouldn’t happen. We are too serious for that.” —*Corporate Employee*”
> [italics in original].

Discussing the concept of “source business”, difficult to understand by the face of it even for experienced managers but vividly acknowledged and illustrated when unfolded in a dialogic context, with the Hydro Way facilitator she lamented;

> “Of course, introducing the Hydro Way in such a culture as ours, it was unfamiliar for many. For most of our staff what Hydro is doing is self-evidently important and beneficial to society. It does not need any form of “profiling” or “branding”. You know what we say, that Hydro has ‘a very high level of its low profile’. This because what we do permeates society fundamentally.“

Seen in this perspective, then, Hydro imitates partly the slogan of the Swedish Wallenberg family finance empire, the one who initially also enabled the original

funding of the establishment of Hydro in 1905: "To be, but not show" ["Å være, men ikke synes"]. According to the Hydro Way facilitator, Hydro has so much power and impact in society, that it necessitates a form of humbleness and unobtrusiveness in their representational idioms. Their actions speak for themselves. The talent later changed name into "building businesses that matter".

The second talent was presented in the siegelgale report the following way:

> "Talent #2. A drive to optimize.
>
> Hydro is naturally inclined to make the most of what it has.
> Hydro was founded on the idea that nature's yield could be improved through the application of science and technology.
> Values such as frugality and thrift grew in an environment where resources were not expendable."

Some of the quotes from Hydro manager's supporting the analysis were the following:

> "Norway is an agricultural society and even our business structure is agricultural. Think about what counts on a farm—thrift, frugality—it's puritanical." *—Corporate Executive.*
> "I don't want to create something fancy for the sake of something fancy. That's wasteful." *—Aluminium Executive.*
> "There's a classic Viking poem called the Golden Middle Way which states that not enough is not good, but too much is not good either. That still applies." *—O&E Partner.*
> "We're a company that appreciates things. We don't squander assets. We get the most—or try to get the most—from our resources. *—Agri Executive"* [italics in original].

This talent later changed its expression into "making the most of what's available". An anecdote that might illustrate some of these issues, or "talents", was when I was was working out of the corporate headquarters in Oslo. Alexander, a storyteller by nature, and me were informally discussing the Qatalum project. He had recently returned from his first trip and was excited by the meeting with Arab culture and their partners in Qatar. Spontaneously he confided something that was of some surprise to him. "You know, we actually had to travel on first class. All three of us traveling from Norway, we had to book first class seats on the plane." "Oh, that sounded horrible", I shrugged.

"Well, you see, also, we had to upgrade our hotel standard down there considerably, from that which we ordinarily use". The reason was that, "otherwise it will be very wrong in relation to our partner in Qatar Petroleum. How the standards of this and that is supposed to be. They will notice at the other end." As I figured, telling me that, it revealed something about what Alexander, and arguably the others, considered being the "normal" way things were done in Hydro related to standards of this and that. Reinforcing both the impression of the Hydro Way process and product, and the anecdote by Alexander, remember that President and CEO Reiten (in chapter seven), also considered the organization to be deeply serious and sober ["grunn-nøktern"].

The third "institutional talent", the "instinct to commercialize", later changed to "always looking for commercial solutions", was according to the brand analysis by siegelgale not yet "fully realized". Hydro's "commercial potential was widely acknowledged", and was evident especially in those businesses with high profitability, like in oil & energy, and in the company's "entrepreneurial bent", but still had not been fully realized in terms of "profit potential". As we saw in chapter seven, the profit potential, in terms of shareholder value was realized most thoroughly in the years since the report made its statement in 2003.

The fourth talent, "a passion for social commerce", was also something of a confusing concept for Hydro managers. In the siegalgale report in was outlined thus:

> "Talent #4 – A passion for "social commerce."
>
> Since its inception Hydro has fused business performance and societal contribution into a single discipline. Business demands and societal demands are viewed as inseparable and interdependent.

Some quotes from employees and managers illustrating this talent is presented below, they are sorted according to various themes called attention to in the report:

> "I would like to resolve the stupid tension between money and society because they are one and the same." —*Corporate Executive.*

"We see the world through one lens where there is no distinction between business performance and social contribution. They are mutually supportive. —*Corporate Employee.*
"I don't think we have the capacity to isolate business needs from social needs—not without a lot of trial and some pain." —*Aluminium Executive*

- Profit is taken as a means to an end rather than an end in itself.
"For better, for worse, we've used profit in ways that let us contribute more over time—not just to customers and shareholders, but to people generally." —*O&E Employee.*
"Our structure is complicated because we wanted to ensure that there was interesting industrial activity for our people. Our evolution is not driven solely in pursuit of profit." —*Corporate Executive.*
"We have a hard time arguing for profitability alone, as though that's all that counts. Our history looks at money as a way to ensure self-sufficiency for others as well as ourselves." —*Agri Employee.*
"I think on a certain level people do not comprehend this constant drive for more profitability. We think to ourselves, well, we have enough profits to serve our purpose." —*Aluminium Employee.*

- Hydro's Norwegian heritage highlights the company's orientation to "do well by doing good."
"We helped build a country not just a company. It is in our blood to see the world of business through the lens of society." —*Corporate Executive.*
"The very premise of our existence was to help found a nation, not just make money." —*O&E Employee.*
"Hydro has been synonymous with Norway for as long as both have been in existence—they have always taken social issues seriously." —*Agri Customer.*
"We are four and a half million people trying to save the world." —*Aluminium Employee.*

- For Hydro, building communities has gone hand in hand with building its business. Hydro encourages the creation of win-win situations with direct and indirect social partners.

Talking to the head of Hydro Communications, also the "reputation manager", and thus the responsible of "impression management", the presentation of the "corporate self",[184] she emphasized that concepts like corporate social responsibility more often than not

[184] With a touch of humor this role might have been labelled the "Chief technology of enchantment officer".

becomes an “add-on”, something on top of, or beside, the daily operations of corporations. In Hydro, they stressed the integratedness of the social responsibility aspects with daily operations. That it was an inherent part of doing business. A manifest consequence of this was that their annual reporting on such issues was *not* extracted and taken out of their business context, and given a separate section in their report. It permeated their reporting of the business operations, they tried to convey how it was integral to their core activities.

In a news post on the Hydro website they referred praise of their own branding efforts:

> ”Hydro praised for innovative branding.
>
> Hydro really knows what 'branding' means,” asserts the American branding expert Karen Romer in a double-page spread in the Norwegian daily business paper, Finansavisen, on Wednesday. The paper cites Hydro as an example of valuable brand building and coordinated communications without parallel in Norway. Finansavisen points to the fact that Hydro’s profiling of its values through ‘The Hydro Way’ and marking of its centennial has attracted the attention of communications strategists and branding experts. "There's a common theme running through all of Norsk Hydro's communications, both internally and externally. The result is extremely good, and it was surprising that they have ventured to take such a novel approach," says branding expert and advisor Karen Romen. "This is related to experience marketing, and I haven't seen anything comparable in Norway. This is quite unique, and the management of Norsk Hydro really seem to know what branding is all about," she says.”

Mediums and messages

In addition to their textual representations Hydro, as a corporate body, communicates both internally and externally by a variety of means, from pictures and short movies to internet, and intranet for example through “netcafés”. In relation to their centennial celebration, for example, Hydro launched a huge photo contest, “Capturing Hydro”, were employees were invited to “visualize viability”. Professional photography artists were also invited to make works based upon some Hydro context. Photos and movies

are also actively used through various advertising and profile campaigns and movies disseminated through their internal and external website.

The profiling photographs used by Hydro are now aligned with the long-since established advertising standards of putting the products into the everyday lives of people. Although delivering "source" solutions, and not end customer products, the imperative of "people's everyday lives" seems also to have become a key legitimizing idiom for Hydro business. The product of profiling is the creation of meaning, and the power over reality that the creation of meaning confers (Wagner 1981). Advertising makes technology meaningful, and "… interprets them by creating for its audience a life that includes them… It does so by objectifying the products and their qualities through the means of personal impulses, situations, likes and dislikes" (ibid.: 62).

Advertising "works like magic" in its simulation of culture, and manages to objectify qualities of a product in terms of situational imageries (see figure 42 below), which in turn brings forth the "meaningful" product as a projection of everybody's everyday life. "The product becomes the means by which the advertiser's magical vision of life can be the consumer's own life: all the consumer has to do is to believe in the magic and buy the product" (ibid.: 66). The aspects of everyday life that seems to be of most importance today, also for a company like Hydro, are consumer life and culture. It is interestingly in our case then, that no consumer ever buys a Hydro product. They buy products of which Hydro has delivered some fundamental underlying component. Hydro does not need particular people as consumers to buy *their* products, and thus does not need to sell them anything. Their profiling efforts cannot therefore be perceived to be endeavors of enchanting the consumer, but rather to legitimize their key role as a cultural agent in society. And when "society" is reproduced to a large extent through consumer culture, the idioms of this sphere seems to be the only, or the least the most effective, means of also representing and communicating Hydro's role and contributions.

Figure 42. Typical profiling pictures used by Hydro in their self-representation and "communications" activities. Even for a "source" industrial business, not selling finished end customer products, it seems to be of vital legitimizing concern to place their products in the context of social life, of the everyday life of consumers and consumer culture (Pictures source: Hydro).

Below is a description of two of their profiling short movies, that earlier were made available to external audiences also through the website www.hydro.com. Both were made by "The edge picture company". Text in quotation mark below is text posters in the film, while text without question mark is condensed descriptions of the action scenes in the film, and some brief interpretative comments are added in square brackets.

Film 1:

"A different way" (white on black)
Nature from the northern hemisphere
"I feel like a bird today"
Infrastructure – cars – highway
Green woods, looking like rain forest
Ocean, oil rig [wild nature, technology, progress]
A variety of people – men, women, ethnic different

“Progress”
Operators [low hierarchy]
”You take something from the earth. What are you going to do with it?” (White and yellow on black)
Technology – machines
”Is there a better way to power our future?” (White on black)
Windmills
An Indian looking geologist [Diversity of people]
”Societies need to progress. What part can we play?” (White and yellow on black)
People holding a small aluminium ”window to the future” [technological progress]
A female architect [people diversity]
”Make something lighter and smarter. You change peoples’ lives” (White and yellow on black)
Futuristic buildings
Women dancing ballet
”It’s not just the big things” (white on black)
Black man in a street, a ”window to the future” in his hand, children playing in the background
Pictures of a town at night lit by many lights
”It’s what we do every day” (white on black)
Urbane pictures, traffic, home
”It’s how we make difference. The Hydro Way” (White and yellow on black)
Operators at home, with the ”window”, see the ocean
The sea is dark, get a glimpse of the oil rig [wild nature, technology saves]
The Hydro logo and
”Progress of a different nature”

Film 2.

”A fresh look at aluminium”
”Shapes of life”
Calm music
People at a museum
Aluminium parts on display at a moderen museum [technology as art, Hydro employees as artisans]
”Look with fresh eyes”
People analyzing, interpreting
”See things differently”

”Aluminium underpins the modern world” [importance of modernity, progress]
Picture of a can, turning out to be a can of coke
Baseball-playing family, helmet
Text on picture of baseball-playing, father-son:
”Hydro touches our lives in so many ways”
Barbeque-pictures, the aluminium barbeque tools
”Giving people choice and enjoyment”
”Packaging comes in all shapes and sizes”
”Helping preserve our natural resources” [recycling, environmentally friendly]
Children touching the aluminium ingots
Into the plant
Norwegian west-coast nature, mountains, fjords
”Hydro has refined aluminium production”
Flowing liquid metal
Computer-screens – IT control systems [advanced technology]
”Setting the standard”
Plant pictures
Back at the museum, a cross on the wall, religious music
The cross becomes a window frame [technology as sacred]
Pictures of building drawings, ICT [”high-tech”]
”Crowded cities needs intelligent buildings”
City pictures
”Using less energy, lasting longer” [environmentally friendly]
”Getting the most out of the metal”
”Helping us live better”
Pictures from offices, then cars
”Cars are under pressure”
”To be safer, cooler and more fuel-efficient”
”New ideas and new components”
”Help the industry stay ahead”
The Asian woman driving turns out to be a midwife [care, people, life]
”Thousands of people around the world”
Pictures of Hydro people in red work suits and helmet (two men, one woman, all white, she is without a helmet)
”Creating a million variations on a theme” [creative variety and innovation]
Back in the museum
”Society needs to progress”
A family with kids driving a car
”Hydro is there”
The midwife in the other car
The cross, the window frame, on the wall [art, the sacred and technology]

”Shaping the future”
Buildings
Aluminium parts hanging from the ceiling
Hydro logo and
”Progress of a different nature”

The central slogan used by Hydro in most of its promotion material is the final statement in the two movies above: “Progress of a different nature”. Along with on-liners like “Making a difference” and “Why not?” the statements centres around Hydro’s technologically innovative mastery of nature to the benefit of people’s everyday life and the progress of society. As the films also show, they try to establish strong metaphorical associations between technology, art and the sacred. The relationship between art and technology has been discussed earlier, while the relationship to the religious realm, the domain of the spiritual and the sacred, has so far received little attention.

The aspect of power that earlier has been described as authority Weber defined as the legitimate exercise of “imperative control”, perceived as the situation in which commands yield a high probability of obedience (Weber and Parsons 1964). The key aspect of authority is the presupposition of the unity of the relationship between command and obedience, in the sense that in the resort to coercive power and persuasion, authority in some senses has already failed. As Arendt (1958) also noted, legitimate authority need not be depend on violence or argumentation, but is based in moral premises shared by those united in the hierarchical relations. In her argument, authority can legitimately be established only by the invocation of a reference source outside of, above or beyond, the authorities themselves. Examples of this could be the law of nature, the word of God or a coherent body of philosophy. In Zuboff’s interpretation; “Authority is the spiritual dimension of power because it depends upon faith in a system of meaning that decrees the necessity of the hierarchical order and so provides for the unity of imperative control” (1988: 222).

In the French sociological tradition of Durkheim and Mauss there is an intimate relationship between the social and the sacred. Zuboff makes an illustration of such a

conceptualization: “Authority requires collective participation in a system of meaning that extends beyond the immediate context, beyond those who command and obey, and reaches into the domain of transcendent values” (ibid.). As Sørhaug notes, in this tradition the sacred is the social externalizing itself by projecting its powers into objects, which in turn are idolized and worshipped. Societies are thus legitimizing themselves through a process of fetishisation (2004: 324). Sørhaug argues that authority is intimately related to the sacred, because the sacred may deny and conceal power relations reproducing themselves. The sacred resolves the self-referential problem of power. Even in a post-modern or “reflexive modernity” (cf. Beck et al. 1994), there is place for tradition and religion enabling a credible[185] authority, argues Sørhaug, answering Hannah Arendt’s question in a different way than her own diagnose that authority in a modern world is an impossibility (op. cit). In the modern relationship to knowledge and truth, Sørhaug finds that tradition and religion is merged in a form that enables institutionally anchored authority.

While tracing the belief systems that have legitimized managerial authority, Zuboff concludes that the manager’s role came to be identified with the “… guardianship of the organization’s explicit knowledge base” (op. cit.). Sørhaug finds the condition for the possibility for modern, and managerial authority, to be found in the knowledge regime he chooses to call the “college” [“kollegium”]. Knowledge regimes are relations between organization and knowledge, power and legitimacy. The college is characterised by a tradition of a community of participants on equal footing, engaged in a continuing and bottom-up and opening-up dialog concerned with truth. It is dynamically constituted by a dialectic between consensus and controversy, hypotheses and critique (op. cit.). A company, and indeed society, must, however, incorporate mixed ideal type knowledge regimes. In addition to the “college”, both the “line” and

[185] The Norwegian translation for concepts like trustworthy or credible is “troverdig”, and literally it means “faithworthy”. While it has certainly lost its religious denotation in Norwegian language practice, it is embedded in a decomposition of the word, as in “tro-verdig”.

the "network" are necessary and reciprocally constitutive for complex and viable organizational forms under the circumstances of reflexive modernity.

"Professionality" and spirituality

As I hope to have illuminated in the foregoing presentation of Hydro cultural and knowledge managing practices, for example in the sacredness placed upon "faglig ledelse", ("scientific management" or "professionally competent, expert-based managing"), in "self-managing" and delegation; they seem to be strongly characterized by the "college" knowledge regime, although the two others of course are present as well. It is within the values and the reality horizon of the college credible authority may rest, where there is some faith in an external reference, according to Sørhaug. Although science of course is readily invoked, and in its scientific legitimation of management Hydro pays its due to the "original" American tradition of engineering from where the "management revolution emerged" at the turn of the twentieth century (cf. Shenhav 1999); it is nevertheless, as Sørhaug (ibid.) argues, something religious in the way the college connects knowledge and truth, in the way it manages knowledge traditions: "The college can create credibility ["troverdighet"], because it is there we can believe that we know" (ibid.: 325).

If this form of external reference for power is indeed enough, however, I find questionable. My own argument would be that authority, as well as other fundamentals of social life, needs a much more "solid" and deeply extensive anchoring. Efforts to achive "credible authority" we have seen in the identity politics enacted in the extensive "Hydro Way" material, overseen by communication and "reputation managers". Managers and other members alike expressed scepticisms at this major effort of externalizing and explicating the Hydro "culture". Based in the extensive "brand process" Hydro chose their values, mission and talents. It seemed that most members recognized themselves in it, identified a link between the signs and the reality they experienced, while being more euphorically embraced in their China ventures.

Nevertheless, a range of other values could have been chosen. In the brand process an extensive list of potential values emerged. As the siegalgale report argued, "the idea of ensuring viability by developing natural advantage implies particular values", and subsequently list a range of values – from ingenuity and pragmatism to responsibility and empathy. Although "respect" and "cooperation" was finally chosen, if the imperatives of the contemporary "economy of signs" more or less dictates the forging of corporate "branded identities"; why not for example a word about their particular "democratic" and "participative" living value tradition as constitutive to their work life relations and managing?

In their quest for an "identity", objectified as an instrument for bringing about shared understandings and ways of working, indeed for explicating "who we are", we might lament that identity has become objectified through what Larsen, noted in chapter six, calls "acts of entification" (2008). It referred to the rendering of qualities as "detachable properties" that can be attached and detached at will, and thus subjected to choice, change and control. Larsen argues that acts of entification are "… a prerequisite of management and governmentality. And as the demand for management increases, so does the number of manageable entities" (2008: 204). In light of the self-critical assessments made in Hydro of these efforts, we might note that they are reflexive of the inherent "dangers" of entification, and in practice does not argue that "anything goes" or that this is the Hydro way of being and doing seen as divided from everyday practice. Rather to the contrary.

The Hydro Way was depicted as an "elevation" or explicating "concentration" of "true" experienced qualities, and outside of the practical contexts and circumstances it was to some extent seen as useless by inernal members. The Hydro Way has as such two radically different use contexts, internally and externally. In both contexts the Hydro Way might be seen as "objectified signs of self", as it were, but the relations of the sign to practical experiences of "reality", or between signifier and signified, is different. While being awarded prizes for their brand identity externally, and the new China ventures could here be considered and "external context", in the internal contexts

these forms of identity politics were viewed with a healthy scepticism. This might signify, in line with Larsen's proposition that "… identity discourse becomes a symptom of the very ailment it seeks to cure" (ibid.: 207), that they perceive the thematization, instrumentalization and aesthetization of identity as somehow potentially undermining qualities and practices revered, and thus something to be treated carefully. Internally, members insisted upon a "representative" and in one sense non-arbitrary relationship between the signifier (the Hydro Way material) and the signified (the meanings of Hydro cultural practices as experienced by members). As Larsen concludes: "When identities become instrumentalized, they no longer define our selves and attune our perceptions of the world. But they gain in visibility as calculable entities within the reputation economy" (ibid.: 211).

In Hydro, the continuing conspicuous concerns of process and product quality, and its relationship to knowledge-based projects and production, and possibly also its "closeness to nature" and a far-away from end-customer position, still strongly resist the notions of identity branding, in the sense developed by for example Naomi Klein (2001); of the sign engulfing and usurping the "material" product of consumer brands like "Lacoste" and "Tommy Hilfiger". In the latter cases the brand, for most significant purposes, has itself through a process of "entification" become the product of exchange in an economy of signs. Still, in Hydro the brand "adds value", but it is a value derived from underlying purportedly "real material" qualities of the product. Thus, the distinction between image and product is still maintained and not completely naturalized, which in turn indicates as sceptisism among managers towards entification.

As such, we may contemplate that identity politics seems also not to provide a platform upon which an external referent of authority may be founded. The reality opening insights provided by the new physics of entanglement and undividedness, and the subsequent possibilities they present for carving out new ontologies of differential and "monoplural" whole-part interdependencies, as discussed in the chapters five and six, would be a more promising candidate. I would argue that the college knowledge regime is but an enabling condition, and not a basis, for the bringing forth of powers of

knowledge, truth and belief that may sustain deep authority under the circumstances of reflexive modernity. In a highly speculative vein, the new physics and possible ontologies carved out appurtenant to it may possibly form a modern, and science based, variant of the Gnostic relationships between knowledge, spirituality and truth.

As also noted earlier (chapter six), the experiences gained in Hydro practices suggest intimacy with, however tacit it may be, the deeper and fundamentally processual and intertwined "nature of nature", as described formally by the new physics. In Hydro's juxtapositioning of the sacred, art and technology, it exemplifies the debate on the interaction between culture and nature in interesting ways. In Hydro the "myth of progress" (Von Wright 2003) is not a myth of historical necessity, but a creational quest of bringing forth (see especially chapter six).

Celebration

Fortunately I had the chance to witness the Hydro 100 year "birthday celebration" among corporate staff at an old Hydro estate just besides headquarters at Vækerø in Oslo. It was during an extended lunch break and conducted outside. First we ate some "Middle age casserole", Oslo philharmonic choir sang, short speeches by the communications director and by President and CEO Reiten were held. The former repeated what many interviews during the day had asserted, that Reiten was the most important industrial leader of Norway. Reiten cracked a small joke about wearing TV make-up all day, which made him look good today. The main event was the showing on a big screen of a celebration video made for the occasion.

It was December 2, 2005, and the video was shown to 35 000 Hydro employees on the same day at Hydro locations in 40 countries all over the world. The video was translated into 10 languages. It contained a celebratory speech by Reiten, ceremonially arranged on a chair, properly dressed, with a classical painting in the background, not dissimilar in aesthetics to the frame shot of the ritualistic King's or Prime minister's address to the Norwegian nation during Christmas and new years eve. The main content

of his speech was to congratulate all the employees for the effort and the results they had produced. The film further contained shots from the local centennial celebrations around the world. Happy birthday salutes from a variety of places were included. In between it was inserted identity-building slogans like; "Geography and culture separates us, but does not divide us."

A blues-band played live music while pictures from the "Capturing Hydro" contest was shown in the video. Some of the photo artists had brief statements, the German photographer was impressed that such a world existed, like that on the aluminium plants. The Norwegian artist was struck by how industrially rough but still beautiful the plants were. The video also contained salutations from a range of notability Hydro partners; the CEO of General Electric, mayors, the head of the Nobel peace prize committee, and from the music group A-ha.

After the video presentation ended the "Hydro song" was sung, the text made by one well-known Norwegian music artist, Ingrid Bjørnhov. The live sing-along at Vækerø was not particularly impressive, neither in volume nor quality. Hydro also marked the occasion by giving 30 million NOK in aid to various aid organizations. After a bit of small talk the party went back to work in their offices near by. Entering and exiting the various office-buildings and plant-buildings of Hydro it inspires an analysis also of the expressive sides of material *non-language* idioms.

Sørhaug proposes that although leadership is performed in a multiplicity of ways in highly heterogeneous contexts, a transhistorical and cross-culturally universal feature of leadership is its significance as "*incarnations of organizational processes"* (2004: 31, italics in original, *my trans*.). That is to say that more or less coordinated human interaction, which at least to some degree are directed towards common values, goals and tasks, are embodied by particular persons. The incarnations incorporated in managing in Hydro seem to express a knowledge tradition and particular trajectory of capitalist history that seems at the millennial moment of financialization to slip into oblivion. As a potent alternative to the excesses of "pure" finance capitalism, this is highly unfortunate. To even more comprehensively grasp the constitution of Hydro's

"incarnation inc.", the issue of material metaphors is explored in the next chapter. It is an aid in grasping some of the cultural meanings of what is *not* said, what is possibly avoided, tacit, secret, unconscious or taboo.

Chapter Ten

10. Material Metaphors of Managing: Buildings and Bodies

A fundamental difficulty in this whole business is that we are concerned all the time with the operations of the human minds as well as with objects and actions in the world out-there.
(Edmund Leach 1976: 17)

Why has the physical and 'thingly' component of our past and present being become forgotten or ignored to such an extent in contemporary social research?
(Bjørnar Olsen 2003: 87)

While the foregoing chapter investigated issues of language based representational and communications material, there have been several earlier examples (e.g. “the Decision Gate four” description, see chapter six) also of a number of non-language idioms, or expressive sides, to various material objects, structures and forms which both informs and signify various aspects of project and corporate work in Hydro. As announced above, I will now briefly look at a small key set of them; the materiality entailed in the body as a corporate object, in dress-(codes), in the significance of architecture, buildings, or houses (headquarters and factory buildings), and finally, the bodily and sexual symbolism of production technology and core products. It is argued that these forms of materiality provide metaphors of meaning that complement and aid the interpretations of the wider issues that the herein work has been investigating.

More particularily, the empirical material explored below has also enabled an analysis of aspects of managerial work in projects and the corporate context somewhat conspicuously missing in the foregoing presentation; that of gender and sex. While also having discussed these issue sin face-to-face encounters, the ethnographic material that surfaced out of these dialogues I felt was insubstantial in saying something of interest related to this theme. More about the reasons why are touched upon below. However, when describing and analyzing material methaphors it opened up a possible domain in which I believe industrial managerial work could be related to aspects of sex and gender in interesting ways. It must be emphasized that there are numerous other approaches to studying gender than the one pursued here, also in the present context, and that gender and sex obviously are much more than “material methaphors”. Nevertheless, the chosen point of view was the one in which I felt participant observation and other aspects of ethnography was made highly relevant and enabled the material to “talk” on these issues.

The Corporate Body

In the preceding presentation a strong emphasis has been put on the ideational, cognitive and communicative practice aspects of the empirical "fieldflows" under investigation. The more "bodily" underpinnings of these issues have been underemphasized. In the concrete operations work at industrial plants, the importance of the body is easily perceived, but the body is relevant also in the more dedicated sphere of abstract idea work in the life of creating and managing investment projects. One obvious thing to notice about the people's bodies in Hydro is that they are mainly male. Some relevant aspects of this situation are discussed further below. As we saw in chapter five, the relevance of the concept of the body is strongly signified in the projects emphasis on safety and creating a "safety culture", both in the project itself and in the emerging new plant. Safety was described as the "dial tone" that must be handled before anything else is taken into consideration. The safety theme, indeed the whole intense focus upon health, environment and safety (HES), is ultimately legitimized by the incentive to protect the body from harm.

The body is a construct with which it is "good to think" when trying to comprehend cultural aspects of meaning, because it highlights dimensions of both "same" and "other", subject and object, tool, substance and phenomenology. As numerous studies illustrate, the body may signify aspects of social values and institutions, and vice versa, and in a variety of ways. For example Barth (1978) shows how ritual use of the body establishes facts of experience, and transmits knowledge that are analog rather than digital and "language-like" in nature. And as argued earlier (cf. chapter two), bodily experiences provide other and complementary experiences and forms of knowing than those constituted through language processes. Although obviously the body in light of the "narrative turn" can also be interpreted "as language", however as described in chapter four, the "languification" of phenomena as emotions, nature and the body is professionally uninformed, and the latter might thus be considered a prime example of a non-language idiom.

Rather than constructing such an opposition, perceiving the body as contact and separation interfaces the body originates processes of mediation between objects, language, subjective perceptions and shared symbols. The body serves as such as a mediating metaphor for the relationships between part and wholes on various scales, in which the relation between individuals and society is but one. In our cases, for example, the project manager's plans and designs, enables and enforces by various means the standardization of bodily use to fit notions about the quality of work routines, to support goals and norms of both high quality processes, products and not the least HES. This goes for regulating work rhythms, for how to handle technology and control systems, use of protective equipment, for housekeeping, and several other aspects of work. In practice this means molding the body uses to fit technologies, and abstract ideas about quality and morality, formed discursively and recursively by a corporate, distributed and wholistic corporate body labeled "Hydro". The aim is to enable and regulate wanted body practice and reduce risk exposure. As we have seen earlier (chapter five), this process is far from straightforward.

It was conveyed above that Hydro realized during the 1980s that focus on HES, housekeeping, on aesthetical and instrumental tidiness, not only were moral values in itself, but that it increased productivity and the quality of production as well. Nevertheless, the unfolding in body practices of directions, regulations, and enablers of wanted forms of body use is accomplished in specific locations in time and space. The Foucauldian (1979) notions related to the disciplination and self-disciplination of the body, and its analogy to societal premises of power, is in our case thus both made in the name of the instrumentality of productivity and production, and due to moral claims of protecting the body and life; and by implication the cultural and social order, from harm, danger and destruction. The Hydro emphasis on the value of life, was incidentally one of the moral themes for example the Chinese production manager in Suzhou was most positively impressed with, after studying the Hydro Way material. As we will see, however, in the logic of "managementality", rather than governmentality, there is not

only room for (self)disciplination, but also for various forms of seduction (Sørhaug 2004: 104).

Men in black

When traversing various Hydro locations it is difficult to avoid noticing that management in Hydro projects and the whole Hydro corporation is, to quote James Brown, "a man's world". In Hydro Aluminium only 16 percent of managers were women in 2006. For both the top 50 and top 200 managers in the overall Hydro organization, women representation was approximately 19 percent.[186] Naturally, this situation provides an impetus for a variety of investigations and reflections, related to for example gender and power, gender and the workplace, women and leadership positions, and so on and so forth. Some of these issues are, however, extensively covered elsewhere. Here then, I will discuss but a few of the possibilities available, but a few in which I believe my own empirical material seems to be illustrative.

To strike a note, I agree with Sørhaug that in "managementality", the pattern of authority related to "managing mangement", the creation of a mental and practical space were management provides its own context, is a space comprising things and (male) men. "Everything in this space can be said to be concerned with the thing, or the things between men" (2004: 101, *my trans*.). He argues that work life suppresses sexuality, or gender, and that it has turned into a negative category. Moreover, this negativity has been projected onto women. "Men has no sexuality in industrial production, because they are the ones there, and they are the ones that should be there. It becomes relevant the women are women, but not that men are men. In working life human beings are [male] men" (ibid., *my trans*). It is thus all the more relevant, like I will do along some different dimensions, to thematize male sexuality in the context of managing in relations of industrial production.

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[186] See Hydro annual report 2006 (http://reports.hydro.com/en/investor_relations/financial_rep/annual_reports/2006/viability_performance/organization_working_environment.html).

One of the most striking features to notice in the work context of upper layer managers in Hydro, and especially "corporate" forms of managing related to headquarter types of locations, is the prevalence of "white men in black". What I am more precisely aiming at here, it is a landscape inhabited by men in suits. More precisely, these suits are not always black, and to be particular they are not always suits. The costume use comes in many colours, flavours, and combinations. In terms of color most use in different versions of grey, blue, brown and black. Suits with dress shirts or Oxford shirts, classic or cut away collar, with ties in different suitable colors are worn for high-level formal meetings, but also in daily office work. Several combinations are frequently at display, sports jackets and also, but more infrequently an occasional tweed jacket, with various types of trousers, suit, cord, cotton or jeans. Various shirts were worn underneath, also often with a wool or cotton pullovers on top, with the shirt collar visible.

It was a topic difficult to investigate, not the least because of my own deficient proficiency in the area of clothing. It seemed like the degree of formality of the clothing were somewhat contingent with both age and formal role in the hierarchy. The older and and higher placed the more formal. This is a truth that must be qualified, because the "suit-wearing" practices were possibly even more correlated with professional or epistemic group. The economists and finance community dressed up more systematically than the engineering community. For example the projects people were more informal than the traders, even though both groups had their major offices at the headquarters in Oslo.

If we look at some more particular details of the suit wearing, the higher levels of management and the "finance" community "always" wore thin 100 percent wool suits. Most probably of the quality Super 120, and probably "mid-range" prices, depending on the scale of measure. Once I heard one top-level manager telling a small group about his latest suit. He bought it himself in Italy and it cost about 8000 Kroner. "Nobody" wears double-breasted jackets, and most seem to prefer the three-button suit. In terms of cut, it seems like only a small percentage, arguably located more among the

younger and also among the “finance” community, uses waisted suits. For example, the Presidents seem not to be wearing those cuts. There is also a particular type of suit and shirt more in vogue in the “finance” community; the pinstriped suit with the colored shirt (often in some nuance of pink or light blue), with white collars, sleeves and stripes. With this costume, and the waisted cut, it is arguably interpreted also internally as a more “dandy” expression.

Even in our contemporary so-called post-modern age, men in power, and to a large degree woman in female versions of the costume, wear suits (and variants of it). In the idiomatic vocabulary of work-place gender-neutral “male-ist” dress codes, women in suit-like costumes are in some associations perceived to be “men in skirts”. On the other hand, female dress use is often creative and transformative in terms of “dress code” play and elegance, so also in Hydro. They frequently wear suit costumes, but construct numerous variants of coat, blouses, tops, sweaters, skirts and trousers. Shades of combinations from more formal to more casual costumes are used. The female managers are always dressed up “neat” and proper, both conservative and elegant. They are visible, but do not show off, it seems like a balancing act between “not too much” and “not too little”. One interesting distinction is that there is more of a one-to-one relationship between the male suit as a “work costume” and as a “party costume” than the case with the female suit. Wearing a tie or not is probably the single most important distinction for being “casual” or not. The female suit is arguably more of a dedicated work costume, in more distinct contrast to their various party dresses and costumes. Nevertheless they “dress up” also at work with various accessories; bracelets, rings, nice girdles, earrings, scarfs, make-up and parfume.

Be it heads of states or corporations, or men wanting to “dress for success”, to embody confidence, control and potency in a variety of situations, they wear suits. It is the “leadership” costume *par excellence*. In the Hydro context, I want to briefly explore what this practice might signify, other than just acknowledging that it is the “tradition” in such “types of work” or in these instituted roles. Such a taken for granted position would prove unwarranted because, in light of for example the long Hydro history of

"democratic capitalism" and participatory, low-level hierarchy type of work life relationships, it could just as easily indicate an abandonment of the suit as a work "uniform", in the name of for example equality and "class-compromise" unity. Indeed, suit wearing in Hydro is strongly associated with "managerial" or "corporate" work, while it is seldom used at the production plants themselves, at least not "close to production". Here of course protective closing, and "off the floor" more "informal" styles of dress are widespread.

The symbolic significance of the Hydro manager in suit, I would argue, is along one dimension another expression of the authority pattern of combined discipline and seduction, characteristic of "managementality". As Hollander, one of the few who have given the subject of the modern suit and its relationship to sexuality comprehensive attention, notes: "Current millennial impulses tend toward disintegration, in style as in politics; but men's suits are neither post-modern nor minimalist, multicultural nor confessional – they are relentlessly modern, in the best classical sense" (1994: 3).[187] She argues that the suit have survived through a myriad of fashion trends the last 200 years, and tries to answer why this is the case. As clothes are social phenomena, and since the suit still has survived as long, it must symbolize something socially durable and lasting. Hollander argues that the lasting power of male tailoring instantiates its own self-sustaining symbolic and emotional force, its own authority. This modern thought is itself expressed in the looks of the modern suit. The abstract formal character of the suit, combined with its evolutionary development, in the meaning of maintaining its identity through slight changes, attest to a modern form that is linked to the visual vocabulary of modern abstract art: "… modern rules of modern material design suggest that all lines, shapes and volumes… should produce a visual model of dynamic coherence and integrity, rather than a model of complex display, or one of crude force…" (ibid.: 5).

In sum the modern male suit embodies the fantasy of the modern form as a vehicle of power, beauty and positive sexuality, Hollander argues. She maintains that

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[187] For a brief and brilliant introduction to the sociology of clothing and the language of fashion see Roland Barthes (2006).

the suit instantiates the formal authority of modern art as well as practical design, and continues to display a confident and forceful erotic appeal. “Suits are still sexy, like cars and planes” (ibid.). Moreover, on a deeper level, the erotic appeal of the suit is linked to their imitation of the “unselfconscious” natural dress of animals, like the panthers or jaguars often used in advertising and as logos. The symbolic power and appeal of the suit links the man and the manager to both some of the most durable conceptions underpinning modern social life, and moreover to the efficiency, elegance and powerful forces of nature. And even if female dress in some aspects try to imitate the male suit, it has never succeeded to emulate its “sign of power in the world, and potency in the head”, nor its “fundamental esthetic superiority, a more advanced seriousness of visual form” (ibid.: 40).

On the background of the symbolic expressiveness displayed by male suits, worn by male Hydro managers, and tried imitated, and partly creatively transformed, by the few female manager costumes, it is perfectly understandable that the suit is the preferred managing uniform. As noted above, the Hydro “corporate culture”, as expressed by key members themselves, is characterized by a rational and sober, quiet-going but confident and powerful seriousness. The male suit is thus a perfect idiomatic enactment of such forms of cultural expressiveness. This is relatively straightforward. The erotic appeal of the suit and its corresponding practices materialized in Hydro manager’s wearing them is subtler and more tacitly conveyed.

Sex and suits

Superficially, Hydro project work practices, partly defined also by the male dominance, seem asexual in its mode of reproduction of relations. With a more thorough look, however, sexuality is an underlying theme in several aspects of Hydro work practices. The suit wearing being one example, for as Hollander assert, sexuality is itself behind any strong form in fashion (ibid.: 31). Keeping the difference between eros and agape in mind, I will argue that in the context of Hydro managing, the presence of the sexuality theme is sublimated into acts of industrial production and creation. In line with a long

debate in western cultural history, passions might also here be understood to be repressed and harnessed into vital, creative forces (cf. Hirschmann 1997).

Some complementary anecdotal material supports the notion that the form of passion, of erotism and sexuality, that is expressed in the suit wearing practices in Hydro managing, is sublimated into other activities. One indication is the avoidance and taboo practices related to explicit erotic and sexual remarks. Indeed, and in line with the Chinese Hydro HR-manager's report on Norwegian culture and its engineering and managerial varieties, the avoidance of most emotional forms of expression. One time I mentioned to project manager Jonas a quite unusual Hydro "human resource" developmental project, aimed at enabling members of some teams at a plant to "talk about their feelings". The responsible manager for the project asserted that the program had increased productivity levels at the plant. Jonas, unfamiliar with the effort, shrugged instantly at my suggestion that this approach should be adopted at his unit and in his projects, and promptly, but not without a touch of self-reflective ironic humor, replied: "No, no, I really hope that we at least can keep feelings completely out of this." Literally, the most heartfelt comment I heard him say was related to the aluminium remelter project in China that was terminated late in the process, in the Descision Gate four (DG4) meeting, and thus never came to be a production plant: "It was really like a knife through the heart with the China remelter. If we had completed that project, we would have been good at doing projects in China. We are not there yet".

Peter, living in China over extended periods, had an explicit philosophy regarding women. He had also noticed the extensive practices of extramarital affairs, in the male expat-local women relationships. As a top manager at one of the Chinese plants he said it was anticipated of him to engage in local love affairs. As a man with a position, with authority, status, and money, even some of his own female managers gently hinted at this possibility (not referring to themselves that is). He believed it was a sort of logic that men who had the means were imbued with a kind of responsibility to take care of women. Some of the local male managers alluded humorously to the same. However, Peter's approach was to avoid getting into a relationship with women. As he

said; “that was one of my absolute most clear thoughts before accepting this job. If you get engaged with someone sexually, they literally got you by the balls”. Later he illustrated the situation that potentially could emerge, when he had some quite tough personnel cases he had to deal with, that he would have been powerless if he had been in such a relationship to anybody there.

These attitudes stood in stark contrast to expatriates from some other companies living and working under the same circumstances. For foreign managers Chinese mistresses seemed to be quite common, and the expatriate party scene was liberal and sexually explicit. Indeed, the general pattern of male expat-local women relationships were confirmed by one of the most experienced female foreign expats in Suzhou, working for a German company. As she said during our many conversations, that a consistent pattern of male expat-chinese female relationships of various flavors were constantly reproduced, while the opposite pattern, female expats-local men sexual relations, hardly existed.

The sexually sublimed, if not muted, atmosphere among Hydro managers could also be illustrated by two conversations I observed in the open space at the headquarters. One of the female high level managers asked a colleague: “Do you have one of those screen dimmers, you know those who prevent others sitting beside you from looking at your screen? You see, when flying so much now, it’s an issue.” The colleague walks over to a nearby-standing male co-worker and asks the same question. No, the other guy does not have that device. “You don’t?” asks the first guy, “so you can’t watch porn movies on the plane?” And laughs. The female manager promptly replies from her desk: “no, that’s not allowed”.

Another conversation occurred at a full day project meeting in the Qatalum project, in which I participated as an observer. One of the female managers suddenly rose to leave the meeting. As it was in the middle of a discussion a male manager asked her were she was going. She became somewhat perplexed, and didn’t answer at once. Maybe blushed a little bit, and were searching to find the right words. Some of the others at the meeting interpreted the situation correctly and started to chuckle

somewhat, and a small verbal commotion occurred, offering a few possible vague answers for her to the question addressed; like “you know were she’s going”, “a very well known place”, and in a few seconds she replied, while having a tendency to laugh, that she left for the “little room”. It left an impression of display of a communicative culture, among Norwegians stereotypically known to be straightforward and relatively blunt, that resorted to avoidance and joking behavior rather than explicitly conveying the act of leaving for the bathroom (or whatever more direct phrasing that could have been used). Those issues seemed at odds with the definition of the communication situation.

As mentioned above, Alexander was one of the few managers who more or less repeatedly cracked a few jokes and about male-female issues and delivered comments with somewhat explicit sexual connotations in teamwork situations. However, a domain where underlying sexual themes are quite evident is the higher-level managers preoccupation with size. That size matters. As I already mentioned, in the description for the Descision Gate Four meeting, the largest projects in Hydro were humoursly competing and compared with soccer fields as the unit of comparison. The more soccer fields, the better. The “small” Ormen Lange project, advertised by Hydro as “the largest industrial project in Norway, ever”, covered only about 100 soccer fields, while the Qatalum site provided the layout for about 260 soccer fields. That is enough to host all the World Cup games playing simultaneously. The use of soccer fields as the unit of comparison is however quite logical. Soccer is a global idiom, which more or less anybody could identify with and relate to, and what else could indeed practically suffice? Tennis courts? Parking spaces? Soccer fields seem indeed to be the most adequate choice of a metaphorical translation mechanism in these cases.

The gigantic offshore oil platform structures of the North Sea exemplify the issue of size ideally. These are structures of gargantuan size and technological sophistication, modern industrial equivalents to pyramids and cathedrals. They are sublime fetishisations of *things,* a characteristic of the mode of “mangementality”. And of course, the importance attached to the sheer size of the company, in terms of basic

figures of production, employees, global presence, economy, and so on and so forth, testifies to the recurring significance of size. Likewise the extensive mergers and acquisitions done. On the other hand, the arguably even more extensive demergers (of Agri and Oil and gas) from Hydro indicate major reductions in size and thus signifies arguably the opposite.

The extensive use and legitimizing hegemony of numbers, of the statistical or "econometric mode of representing the economy" (Holmes and Marcus 2005: 241), is itself a metaphor of sexuality. The importance of numbers was illustrated for example by the surprise Hydro expatriate managers were struck by when collaborating with their Chinese colleagues and subordinates. A brief illustration from the diary of Herman, the General Manager of one of the new start-up plants in China, might suffice. On February 1, 2005, he wrote:

> "Immediately after my start I had again to observe an other specialty in working with the Chinese. It came to my mind various times talking with people, results or offers we made recently. It is in general very difficult for them to remember numbers, figures or prices. (If before you don't tell them that they should study and always have that numbers in mind). According to my former experience the sales managers had always an idea of at what prices he sells to the customers. Or what are the conditions or more or less what are the products. Even [here where] we have very little offers made, my sales manager can't remember and always have to look for [the numbers], and he cannot very good relate prices and products to customers. I have asked him to make a matrix showing prices and products to different customers so that he can rapidly find out what we did last time and not to make different offers to customers. During a visit to my friends place I comment that observation, and got the confirmation that the same things happens in other companies. People cannot remember the essence of meetings without looking into the minutes."

About one and a half month later, however, the issue of numbers resurfaces again, but this time around the cultural differences in the importance of numbers seems constituted yet another way, now perceived as a relation of more cultural awareness. In his diary entry March 18, 2005, he writes:

> "As we are going to move into our new site by end of this month, we have received the official post address. Our land is very long so we have got the

> opportunity to choose between the numbers 232 to 240. The question asked to me was an easy answer. 240 seemed to me a number easy to remember and a "round number" demonstrating something bigger. Fortunately I let ask the manager for their opinion and a hot chat could be followed on out on the intranet. The number 238 was close to win, but finally one found out that the spelling for 238, "liang sun ba", especially the "sun ba", does not sound very good, [as it] describes a not ladylike lady... and proposed the number 236. It was accepted by all peacefully. My number 240 is not a good number, because [it contains] no lucky numbers, [but instead] the number four, " si ", in one of the four tones means dead, [something which] made the number totally unacceptable. This story is not important as such, but it shows that with cultural awareness one has to be very conscious that an issue "not at all important" for western people could be very important for the locals. [You] better you ask your locals even if you think there is no importance and sometime you will be surprised. The decision for our "house number" took two days, and triggered a lot of corridor discussion."

Both quotes illustrate a common theme. In the eye of the "western manager", the Chinese relation to numbers, as opposed to the "western Hydro Way", is perceived more in terms of various cultural non-rational categories, rather than of rational calculation as support for making knowledgeable decisions related to operational business practices. Indirectly, the Chinese relation to numbers is interpreted as belonging to the realm of meaning and emotion. Cultural awareness related to such issues is nevertheless encouraged, as they can have instrumental effects in the end.

In one of many fabulous, and by her own measure "sensationalist", phrasings in the "feminist of difference" Camille Paglia's brilliant review of western cultural history, she states: "The realm of number, the crystalline mathematic of Apollonian purity, was invented early on by western man as a refuge from the soggy emotionalism and bristling disorder of women and nature" (1990: 18). She conceptualizes the "flight from emotion to number" as a crucial strategy in culture's, and especially men's, Apollonian struggle with a Dionysus nature. Evaluating the cultural achievements of Hydro projects and productive creation, it ought to be uncontroversial to state with Paglia that "*men* have done this" (ibid.: 38). Listing some of the epic contributions to the western catalogue of male cultural achievements, from art and science, to law and technology, she urges

women to stop being small-minded about men, and concludes with particular relevance the present investigation that:

> "Construction is a sublime male poetry. When I see a giant crane passing on a flatbed truck, I pause in awe and reverence, as one would for a church procession. What power of conception, what gradiosity: these cranes tie us to ancient Egypt, where monumental architecture was first imagined and achieved. If civilization had been left in female hands, we would still be living in grass huts… Capitalism is an art form, an Apollonian fabrication to rival nature… Give Caesar his due" (ibid.).

Jorun Solheim (2007) argues that our categorization of women as caretakers and men as the provider is a modern idea decisive to the development of capitalism. She argues that capitalism is a gendered and gendering process, a historical trajectory that has produced particular notions of gender. Tracing the relationships between sexuality, gender and capital from the enlightenment, she maintains that the modern individualization process, the emergence of the voluntary social contract between free, independent and equal men, had a catch to it. It also entailed a "sex contract" were women through marriage was linked to the family sphere. It was through industrial capitalist processes the underlying bond between the family and production life were broken, the women became the "high priest" of the domestic sphere, ruling the basis of morality and upbringing, but parted from the secular "raw" economy; the realm of the bourgeois male as the family provider, private owner and citizen. That women are perceived of as standing outside the economy is according to Solheim a specific bourgeois conception, subsequently exported to the working class.

In the "male-ish", although purportedly "gender-neutral", atmosphere of industrial production work life, as Sørhaug (op. cit.) elaborates, women are perceived as not only lacking the interests and rationality that production life requires, they moreover represent the culturally codified opposite values of "emotionality", "passions" and "care". It follows that women is perceived as a threat to the male community, and that managing men who are to much in alliance with women potentially are looked upon with suspicion by organizational members. Symbolically they may get infected by the

power and myths of both the "the mother" and "the mistress". In both cases passions and emotions conquer objectivity and rationality. In Sørhaug's analysis, this misplaced intimacy challenges and threatens the male and management bonding, and in the "worst case scenario" the manager could have gone so astray as to have crossed the line of the community.

That the fetishisation of things in practical instances also could involve women, does not change the analysis. In managementality men's relationships to women can to a large extent be seen as relationships between men. In the private sphere women may be perceived as persons, but since women has "… moved out of the world of work, and into the family", in the community of work they are implicitly seen not as persons, but objectified "things", or "… even *the* thing, among men" (ibid.: 103, *my trans*).

Although, as Paglia attests, we know "… next to nothing about the mystery of cathexis, the investment of libido in certain people or things" (1990: 4), and that male homoerotic communion is an understudied phenomenon (Sørhaug op. cit.), the presence of sexual symbolism, of sublimated male sexuality into highly materialized, durable structures and technology of great size and potency, seems like a strong theme. Indeed as one of the underlying fuelling, creational powers in Hydro practices. As we have seen, the male dominance in Hydro has a variety of underlying complexities and implications. As noted above, while governmentality is concerned with control through self-control, managementality in addition enables a community based on "mimetic desire", the principle of desiring what you think others desire (cf. Girard 1977), which makes "'its men' *wanting to want*" (Sørhaug op. cit.: 104, italics in original, *my trans*.).

While the instrumentalization of emotions and evaluative knowledge, of *phronesis*, is obvious in this conceptualization, seduction is here at the root of power, and that without excluding disciplination. Desire creates egalitarianism that blends with ranking and hierarchy created by competition, the latter also a driver in homoerotic communities. While of course women in work life never remain fully in their objectified position between men, they pose a potential force of destruction of the homoerotic community, and are thus being kept "at distance" as persons. Relegating the

female powers of reproduction to the private sphere, the male managing community can in their pursuit of economic and technological, thus cultural, creation believe to be self-sustaining and perpetuating. As discussed earlier, and will be further elaborated upon in the final chapter of this thesis, I believe the ethnographic material assembled and presented here show that the creational man, and the "manager as maker", is driven strongly also by other and more benign and authentic motivations. While mimetic desire to easily can be reduced to an animal-like and consuming "economic man", the other canon tradition in which I argue Hydro managing owes much of its allegiance, documents the continuous presence of for example the joy (and pain) of creation, and the compassionate pursuit of production in an ego-transcending, cultural and humanitarian interest.

Paraphrasing Larsen (1996: 130), we might say that both the abstract time and space in which our body powers and uses is outlined is an embodiment and visualization of a moral vocabulary. In that vein, let us look at another, but related non-language arena, the physical structures that enable and enact Hydro work. These are material forms that organize persons and audiences, and demarcates various scenes where space, time and occasion intersects for the unfolding of professional life in the corporation. First the Hydro headquarters are described, and to further our argument, some illustrations from selected production plants are conveyed. The latter is obviously the physical materializations of investment projects. Subsequently the material metaphors provided by some key products and material objects, key material instruments, inhabiting those spaces will be analyzed. We find the recurrence of some of the themes in the foregoing sections.

Houses of glass, gloves and glory

The seat of both the Hydro Projects organization and corporate top management is located in Oslo. It is from here many of the creation and design activities, the concept work, of new investment projects are conducted. Although the headquarters in Oslo has been divided somewhat between different buildings, there are several common traits.

The most obvious experience you notice when working out of the Hydro headquarters in Oslo is the open space layout. There are simple and elegant furniture and desks. The workstations are clustered in small groups, demarcated by cupboards and quite unassuming partition walls. All made of what looks like untreated wood. There are mainly glass walls into meeting rooms, so it is easy to see in and out, but the glass is partly shaded, so it is not always straightforward to see exactly who are participating in the meetings. There are usually carpet floors, in one building black and white dotted in small patterns, in a large open landscape, with nice and clean desks with docking stations for their laptops, some desks with a more personal touch with pictures and a personal calendar. There is a "clean desk policy" for many workstations, to enable people on the move to have a work place, while reducing office costs. The top managers have their personal desk. The top guys desks have larger lamps, in white glass, looking like a very short palm tree just without the splinted leaves. And larger chairs, with higher backs. They are seldom at their workstation. If present in the building they are occupied in meetings all day. Only a few of the highest levels of managers have their own office.

The first week I was sitting there it felt somewhat uncomfortable. It was quiet, people whispering, you sit physically "unprotected", it is difficult to talk in the phone, and as people are much on the move and new faces appear, there is a considerable ambivalence in people's decisions regarding greeting new faces and how to interact with unknown persons present. As the entrance to the building is strictly regulated, everybody presupposes that unknown people has some legitimate business there, but they cannot know in advance if they are "insiders" or "outsiders", since consultants and partners, and people from various business units to some degree are mixed. Badges indicate some form of belonging, but it is not easy to evaluate from a distance.

The second week was more comfortable, as more people were present, and to the fieldworker it was highly favorable to be present in an open space, to hear people talking informally to each other and on the phone (everybody also using mobile phones). Phone use varied considerably. Some left their desk for a "quiet room" to talk

in the phone, and sometimes also used these rooms to talk informally face-to-face, while some talked about the seemingly most sensitive of issues aloud in the office or on the phone. As many managers with personnel responsibility were present, many discussions were related to how people and plants performed. “We have to find a new guy on casting”; “sourcing doesn’t work”; “I feel Niels will be a very competent guy in that position”; “he is not a remelt guy”, and so on and so forth.

Jokes and small infamies are also exchanged. As one manager greeted another who entered the office space: “Hi, long time no see. You look somewhat better today, last time I saw you looked like a living dead, utterly pale and worn out from all the traveling.” More often there are quiet small talk in a genial atmosphere around the workstations, and often two together enters the “silent rooms” to talk.

Although the architecture in all the headquarters buildings in Oslo are characterized by extensive use of glass, it is their newest building erected in 2006 that stands out in this respect. First time I visited it, Hydro staff had just moved in, and a female manager accompanied me. Climbing the stairs she exclaimed, somewhat humorously and while nodding upwards towards another woman working on the other side of a glass wall: “The women here have to stop wearing skirts”. Her legs were neatly on display in the “window” underneath her work desk. Although the association to the “window” girls of the Amsterdam red light district was to stretch thought somewhat, the analogy was not completely unthinkable.

Epistemologies of transparency and secrecy

The new headquarter is surely thought of as a “signal building”. It is intentionally designed to signify. While walking around in the building it provides a fascinating experience of being able to perceive a lot of the action going on in the offices, and the meeting rooms. The more or less only demarcations are glass walls and doors. In addition to silvery, slim and sleek aluminum structures. It is obvious to think of the extensive use of glass as an effort to be perceived in idioms expressing ideas like “new”, “fresh”, “modern” and “up to date”. Similarly with their open space work

landscapes. Contemplating them you also get an overwhelming feeling of openness, while simultaneously experiencing the secludedness with which the spaces are regulated. Access cards must be presented everywhere and glass enclosed rooms are sound proof. It is a visual spectacle signifying values of transparency strongly. As noted by Hannerz (2007), transparency is one of the key buzzwords, along with accountability, privatization, quality control, branding, auditing, excellence and ranking, of the neoliberal culture-complex, and here it is vividly visualized in concrete house architecture and spatial work organization.

However, as noted in chapter seven, in relation to the Descision Gate four of the Qatalum project, this material metaphor of transparency instantly produces its own signifying negation. Because of the spectacular visual openness of the space, the closedness of entering and listening is all the more brought to the forefront. While you can observe a host of activities visually, for example observe who talks to who, it is nonetheless strictly regulated in which areas you can freely move, and who you can listen in to. Because of this particular spatial materialization then, the paradoxical effect of signifying both openness and accessibility, but also exclusivity and secretiveness, is revealed. This distinct doubleness is of relevance when considering the non-language idioms of significance in such a corporate working context.

The mediating metaphor of the house is succinctly expressed by Tilley in is discussion of the Batammaliba in West-Africa:

> "The house translates cosmogonic narratives into a material, spatial form. The architectural representations of cosmological themes work both as mnemonic aids and as permanent and concrete expressions of the underlying principles of Batammaliba cosmological order" (1999: 43).

Venturing upon using the same term the "cosmogonic" narratives expressed by the Hydro headquarter house of glass bears a resemblance to a workplace version of the Goffman's "total institutions" (1961).[188] These institutions are characterized by the features such as: daily life carried out in the immediate presence of a large number of

[188] For an analysis of firms as total institutions, see Shenkar (1996).

others; the members are very visible; there is no place to hide from the surveillance of others; the members tend to be strictly regimented; life is governed by strict, formal rational planning of time; people are not free to choose how they spend their time, it is prescribed for them; and members loose a degree of autonomy because of an all-encompassing demand for conformity to an authoritative interpretation of rules.

Quite obviously not all of these features apply to the "house of glass" headquarters, most importantly that the two examples Goffman mostly refer to, mental hospitals and prisons, feature involuntary membership. In the Hydro case it is the opposite situation, were becoming both a member and a manager is considered attractive by so many people that it by far outnumbers the positions available. But in addition to some of the similarities in the characteristics of space, most managers also noted their strong subservience related to regulations and prescriptions on time. And as noted, the meeting is the corporate managers main organizer of time, and many of them said they had no or little control of 70-80 percent of their time. In his early contribution in observing senior managers Mintzberg (1973) came to the, at least at the time, surprising conclusion that managers control little of what they do. Related to this phenomen anthropologist Tian Sørhaug has noted that leaders are infantilized by the fact that others arrange for them a lot of their activities and basically steers much of their lives.[189] This insight rings furthermore true with what Henrik Ibsen, the renowned Norwegian playwright, wrote in a letter to a friend, that occupying power is a rather subordinate position.[190]

One experienced corporate manager once humorously, but not without a tone of seriousness, exclaimed informally that; "walking around for too long here at the headquarters drives you mad, it is simply not good for you, or for what you are supposed to be doing. You have to get out there, at the plants, to customers, suppliers." On the other hand, most of the managers were satisfied with the open space landscape.

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[189] Tian Sørhaug, "Først og Sist", NRK, March 2, 2007.
[190] "Pungen på vektskålen", Niels Christian Geelmuyden, Bergens Tidende, October 16, 2005.

In the beginning there were a lot of protests, but after getting used to it, most of them seemed to like the atmosphere for sharing and informality it created.

The emergence of the *corridor* in western housing "design" of the late seventeenth and eighteenth centuries, is said to concur with the individualization and "privatization" processes at the core of modernization (cf. Stone 1977: 169). If so, it might be relevant to note the "collapse of the corridor" in contemporary open space office design (cf. Ervik and Molberg 2006). It is tempting to make it represent one indication of "postmodernity". With contemporary office building design's additional emphasis upon transparency and interactive sharing we might, however, at least partly conclude that the house of glass headquarters signify a neoliberal, post-modern and knowledge age version of a workplace "total institution".

The surveillance aspect in these spaces are akin to Foucault's discussion of the "Panopticon" as a metaphor of modern disciplinary "surveillance societies" (1979). The Panopticon is the prison building design of English philosopher Jeremy Bentham, were everybody at all times could be under surveillance from a vantage tower at the center, while the observer could not be seen from any of the cells. All the inhabitants would be constantly illuminated, creating the effect Bentham called "universal transparency". The inhabitants could never be sure exactly when they were monitored. The effect is control through self-control. Several actual prisons have been built throughout the world based on these principles.

Foucault argued that the new techniques of industrial management, of regulating, directing, constraining, anchoring and the channeling of bodily energies into productive activities, laid the groundwork for a new kind of "disciplinary society" where bodily discipline, regulation and surveillance were taken for granted. This new type of disciplinary power was the antithesis to that which was prescribed by the theory of sovereignty. The latter was a form of power exercised over the earth and its products, much more than over human bodies and their operations, and it did not allow for continuous and permanent systems of surveillance. In Foucault's view the Panopticon was both a sign and a metaphor for the disciplinary society. By constant illumination

and visibility it provided the possibility of total control, not the least through self-control (cf. Foucault 1980; Zuboff 1988).

In the house of glass it is not so much that everybody may be monitored from a "Big brother" type of centralized command. It is more that everybody can be watched more or less all of the time by a few others. It is thus more a surveillance of a "little brother" type. Moreover, it also enables to some extent a monitoring "upwards" in the hierarchy. It makes possible a certain degree of supervising the "bosses". This type of decentralized, relational networks type of reciprocal surveillance might possibly be labeled a "polyopticon", in complementary analogy to the Panopticon. As such it is *also* a materialization of the moral vocabulary of Hydro values such as democracy and participation.

The effect, nevertheless, would be expected to resemble the panopticon in terms of self-monitoring and self-disciplination. The example with women, although jokingly at least contemplating having to stop wearing skirts illustrates the point. If our discussion of managementality, as comprising both disciplination and seduction, has merit however, I would also argue that the "polyopticon" design in the house of glass, in contrast to the Panopticon, in addition signify and enables processes of mimetic desire and seduction. For those passing by, and being interested, the visible legs behind the window beneath the table again being illustrative. In sum the "polyopticon" headquarters is thus a material metaphorical expression of a complex and to some extent heterogeneous cultural values, which seen in conjunction constitute tensional relationships.

Related to both the metaphors of the body and managerial sexuality, and the professional houses of corporate managers are issues of authority, sex and symbolism as materially expressed at the production plants and the shop floor.

Plants of participation

In the Xi'an project there were substantial disagreements on the design of the plant. The Project organization wanted to more or less use the layout and design principles from

similar Hydro plants. Some of Hydro's Chinese employees and partners disagreed. They felt the new plant would become too unassuming and be expressively mute. They wanted a much more colorful and "flamboyant" façade, with huge logo letters, speaking a language the Chinese people would understand and appreciate, as they said. Further they wanted a larger and more dominant entrance gate, a more artistic and carefully made fence, separate entrances for management and workers and separate cantinas. In this dialogue both the Project managers and the Chinese partners needed to explicate some of the cultural values that underpinned the layout and design of Hydro plants.

Investing in China as a big, international Fortune 500 company, you have to signal that, the Chinese argued. Otherwise the status and reputation of Hydro would be in jeopardy. The Norwegian project people argued that the plant layouts were a part of the way Hydro wanted to be seen around the globe, a plain and democratic organization that encouraged frugality, equality and participation. The Chinese understood this, but argued that adjustments were inevitable when entering China. It was a big concern for them how Hydro would be perceived in the eyes of their suppliers, customers and not the least by potential employees and managers. The end result was a compromise. A somewhat more elegant and artistic façade and surrounding around the factory building, including a cast iron fence, but joint entrance and cantina.

In the Suzhou project the layout of the plant was simply imitated from a similar plant in Tönder, Denmark. One unintended consequence of this was that local Chinese production managers, lab technicians and foremen found it strange that their offices were laid out side by side, along the whole side of the factory hall. For them the layout symbolized an unfamiliar isolated way of working. Sitting alone, one person in each office, along the whole length of the plant seemed both ineffective and unpractical to them. Much more accustomed to sitting and working in groups, the layout signified other values. Values, one might also add, seemingly at odds with the Hydro values of participation.

An anecdotal illustration and known "living story" within the Hydro cultural tradition, exemplifying among other things wanted values of for example "participatory

managing", which is also strongly related to the significance of space and use of the building, is the story of Sindre, a director in Hydro for ten consecutive years.[191] While accepting his new job as director Sindre was told by top management that he had to anticipate the possibility of having to substitute most of the managers that by now served under his leadership. The leadership survey rating showed that they had very low scores. Sindre got quite furious and told himself that it was totally out of the question to let anybody go until they were offered another chance. As the short version of the story goes, in a couple of years the same managers came out on top of the leadership survey. What had happened?

Sindre had worked systematically with developing the management team. First they had used months to discuss values, norms and "good leadership". Then Sindre allegedly said something like: "Now we have done a lot, but really nothing. Our discussions have comprised many an important word, but also, not much more than that. Now we have to train in practice." Subsequently they walked around at the plant, doing "training tracks", two and two together. They observed practices and the state of the plant, discussed their observations and asked the question: "What do we as managers do with this?" For example how they were going to act when experienced employees did not fully comply with safety routines.

What Sindre did next earned him a place in the verbal storytelling culture of Hydro. He moved his office from the administrative building at the plant site, a house people usually referred to as "the house of glass" ["glasshuset"], and down to the spare parts storage in the production area. The focus was to be on production, and Sindre said that means the director had physically to be there as well. And, incidentally, he noted humorously, if they were good enough they shouldn't be too much in need of spare parts either. The people working in staff functions were not too happy, feeling that Sindre to some extent underestimated and ignored their work.

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[191] A note of thanks goes to Associate Professor Roger Klev, who first brought the story to my attention. He has a long research collaboration history with Hydro.

Furthermore, Sindre initiated a complete aesthetical renovation of the plant. New painting everywhere, green areas, lawns and flowers; new work outfits for everyone, inclusive of those washing the cloak rooms and conducted "low status" jobs. His reasoning was that people would not become concerned with quality of production if they worked in a place looking messy. In addition, to be able to focus on environmental issues, it has to show also in the surrounding areas of the plant. Lastly, he felt that the concept of "low status" jobs had to be eliminated. Either the job is important, or there is no need for the tasks to be conducted, and then those jobs can be terminated.

The kind of values that the plant architecture, and the discourse it instigated, and the symbolic actions of Sindre related to the plant physical "template" and its relationships to work practices and morality, seems to exemplify some common perceptions in the Hydro production communities around the world. In Azuqueca, the project managers made a point out of the fact that the administrative and the production areas of the plant were co-located. The office wing was placed "wall-to-wall" with the production hall, and connected by doors. They felt it expressed values that they believed in, indicating that production and administrative work were placed on the same footing. However, as one of them noted in a discussion about safety values: "If it was up to me, the plant management would have their offices in the middle of the production area. In this way, they would be the ones that were exposed most extensively to risk and danger."

In this way we might agree with anthropological notions of material culture (cf. Tilley; Olsen 2003), and in particular the emphasis placed upon metaphors of houses and buildings. Also in the corporate context explored here, both headquarters and plants express ideas of instrumentality and morality in visual form. Dependent upon the expressive situation, and the communicative actors participating, these material metaphors are interpreted and various implications are drawn. In Xi'an we saw the plant materialized as a form of a hybrid compromise of the various ideas the project's designers brought to the scene. In one sense the plant indeed became a "structuring

structure", a device used to standardize the "Hydro way" (before it was "written down") of both doing and meaning things, and implement it in a Chinese context. On the other hand, the plant building was inscribed with particular local conceptions, transforming to some extent ideas about the "Hydro way".

Thus, the plant was not only a structuring structure, but also a translational and transformative structure, a mediating metaphor that discursively provided a unit for comparison of both practical and moral, if not cosmogonic, conceptions. It enabled a revolving, mediating materialization with which the emergence of a new, "glocal", social order was co-originating. In this way, situated notions and practices were transformed and fused with "universal" Hydro principles and to some extent transcended in favor of new categories, "creolized conceptions" and "mongrel management". As a meaning or metaphor machine, the building functioned both polyphonically and differentiating, it expressed different things to and for positioned subjects. On the other hand, it functioned in daily practices as mediating, standardizing and unifying different perspectives and "worldviews".

The relationship between the physical plant and sex, or gender, relations can be illustrated by an anecdote somewhat similar to the story about Sindre. It was told to me by Peter and I never sought corroboration or alternative views of the story.

The female factor(y)

Peter had a lot of experience from plant management at different aluminium plants for several companies worldwide. Among other things he had been a cast-house manager at one plant for seven years. Here he introduced a number of organizational innovations to improve the working environment, a culture that was characterized by what he called an intense masculinity. Among other things he hired a female interior designer. She came up with the idea to paint with color all the equipment at the shop floor and the interior walls of the factory. Many people thought that it was nonsense. They did it nevertheless, blue and orange at the casting equipment, yellow for the cranes, and in the roof. Most

people were satisfied with the result. It became easier to do housekeeping, easier to see the dirt.

Another measure taken by Peter was also in conjunction with the masculinity of the shop floor. It was an intently rough social environment on the shifts, with harsh language use and a lot of dirty talk, for instance. Remember that Peter was a former elite soldier, and not one easily frightened by really anything, as it were. Something that also provides partly an explanation for his courage in introducing these reforms at this "tough" plant. He had read some literature that inspired him to hire women at the plant, because based on the literature he believed that it could improve the milieu. In a shift of 20 people he introduced a minimum of three women, otherwise it would be too tough for the women he maintained, and it had an immediate effect on the work relations. Lesser crude talk, members started to help each other out more, and a more friendly atmosphere. A lot of positive effects on social relations emerged, according to Peter.

These measures might be seen in light of the contemporary positive values, also in corporate and managerial life, including Hydro, associated with the concept of "diversity". In feminist discourse, women seen as an element that add diversity is illuminated in the conception of "add women and stir". Contingent upon various perspectives of feminism of similarity and/or difference, the notions of women as ingredients creating wanted "diversity" is variously described and assessed.

On this note it must also be emphasized that women were perceived by all male managers of which I spoke of the issue, as wanted and as constructively contributing at all levels of the Hydro organization. A brief testimony that might corroborate these attitudes somewhat was told to me by one of the top female managers in Hydro. "It was not until we bought the German owned VAW corporation that I really felt different because of my gender", she said, and continued:

> "It occurred quite emphatically too me for the first time while walking down the corridors of their headquarters. The male managers there really turned their heads when I walked by. I think there were hardly any women among top management. That experience I think could resemble the feeling of being "other" just because of being black in an all white environment".

However, in the anecdote told by Peter there were also some ”side-effects”. Again in Peter’s perception, the women started to utilize their ”privileged” position. For example they complained that some activities were too heavy, so the men helped them out, with the consequence that the men performed more work. Some of the men in turn complained to Peter about this situation. In addition, maybe as some sort of payback, but this Peter did not know, a form of small-scale brothel activities apparently ensued. The location was the female wardrobe at the plant. During ”inspections”, a form of managerial control mechanism that was more common at the time, according to Peter again, they found red lights, mattresses, and other significant accessories that strongly pointed towards sexual activities. If the women ever charged money from the activities was never made known to the management, at least not to Peter.

A lot of new phenomena emerged in the wake of introducing these new “measures” at the plant. Many were skeptical towards the introduction of women from the start, because as they saw it the work ought to be a tough, manly, hard kind of job. In introducing women and seeing that they could perform as well, had in some employees eyes a negative de-masculinization or feminization effect on the status of their work. And when the women complained it confirmed their predefined biases.

In light of the earlier discussion of “managementality” and homoerotic male bonding, the introduction of the “female factors” had certainly some interesting effects. It introduced into a contended culture of masculinity, although of course “gender neutral”, objectivity and rationality strong elements of “feminine” caring and passion. This in terms of both the new physical aesthetics and women presence at the plant. As we saw above, these alleged feminine characteristics could pose a threat to the male community reproduced through fetishisation and “thingmaking”. In this particular case, in addition to the transformative effects it had on the “rough” masculine working relations, it also seems to have unleashed some powerful passions in both “camps”. Repressed forms of emotions and passions, in the contextual sphere of work that is, were unlocked and materialized in behaviors answering the release.

Analyzing further the non-language idioms of Hydro's immediate cultural environment in terms of gender, sex and culture/nature, we might symbolically interpret some of the key artifacts, products and physical structures, of an aluminium plant at the shop floor level.

Symbolic sex war on the shop floor

With interpretative frames looking for repressed passions and sexual symbolism in material objects, the shop floor of the aluminium production plants, the realizations of the imaginations of project work, provides rich metaphorical machinery. Entering this Dionysian space, as the photo artists in the Capturing Hydro program testifies, is almost like entering another reality dimension. People covered in protective equipment working in heat, smoke, smell, with enormous furnaces and other heavy, rigid machine structures; liquid metal flows in artificial streams, looking like enchanted water, like water touched by the magic of the elf's in The Lord of the Rings. Although its temperature is 6-700 degrees Celsius, it does not glow, and its silver-like calm beauty is mesmerizing. This perception testified also by experienced Hydro managers (see chaper five). You want to touch it, drink it, like it was the source of youth. Its extreme danger, its deathly powers are completely concealed beneath the jewelry-like, spellbinding surface.

This silver-shining liquid, pouring down the small and arched technological riverbed, like the blood of a unicorn, is on the move. The source of the flow is gigantic smelter furnaces. They glow red hot inside, were scrap aluminium is melted down, like open mouths eating, or pulsating, deathly warm and dangerous, but simultaneously seductive. Metaphorically like vaginas swallowing, wolfing down, and literally bolting everything that enters inside. When the opening slit of the furnace is barely open, you perceive the seething and frowning inside, and the red, orange glows tantalizing and tempting through the slit. On the outside edges of the furnace, silver-white once molten

metal has solidified while dripping down towards the floor. Like body fluids after orgasm, and the subsequent limp, feeble flight of the male exit (see figure 43).

The stiff, solid and sharp structures of scrap metal that entered the vulva furnace is melted down and transformed inside in an instant, and after being liquidized it flows down the riverbed, silvery and calmly shining it sails, like its transition in the Dionysian melting process has changed its character completely. It does not yet look ordered or organized, but the stiff, crass and somewhat ragged and worn-out aesthetics of its scrap materialization is transformed into a timeless potential, it hides its dangerous powers inside, wrapped in a liquid, enchanted water form, on its way to the casting table (see figure 44). Once there its powers are to be released, it is to be regenerated; its hidden potential is to be materialized into brave new, crystalline and smooth, strong and potent aluminium ingots. The life-seething liquid flows into the casting table, and while being cooled down the liquid is once again transformed, and long, cylindrical metal ingots emerges, like gigantic phalluses, they raise up from the casting table beneath the floor, towards the ceiling and the sky (see figure 44). In triumph, they stand tall, strong, smooth and shiny, brimful of the energy that has been tapped from nature and poured into their making, ever ready to be put to new work. Like a "bank of energy", to use Hydro's own metaphor. In such a perspective it is nothing less than self-evident why the Hydro managers and employees informal self-designation is "Hydrants".

Figure 43. Sexual material metaphor one. The mediating metaphor of the furnace as a life-giving and dangerous cavity and/or vagina (Picture source: Hydro).

Figure 44. Sexual material metaphor two and three. Silvery, mesmerizing and waterlike, and deadly hot liquid metal "fluids", are transformed into solid, shining casted aluminium ingots. Rising metaphorically like proud, potent and vigorous phalluses, brimming with potency and energy, towards the sky (Picture source: Hydro).

In these non-language idioms the wild forces of nature is released and controlled. The shop floor is metaphorically a Dionysian theatre of nature, were the Appollonian cultural powers are challenged and turns out victorious in the end. The powers are contained and utilized to re-create anew, to capture and manufacture the energies of nature. The Hydrants brings forth the iron wall against the chaotic and uncontrollable forces of nature, and with sophisticated *technologies of production and enchantment* accomplish the impossible. It is men's fight against nature and women (here the dangerously seething furnaces), a fight with weapons of concentration and projection (see chapter six), unfolding a process that is transformative; nature's own forces are enacted and re-transformed several times, in a creational spectacle, "… leading to supreme achievements of Appollonian conceptualization" (Paglia 1990: 22). The phallus ingots, reaching proud and tall for the sky, aluminium armored, can in the vein of Paglia's analysis be seen as material metaphors of male cultural achievements in taming the irrational, chthonian nature.

The almost total male dominance in the sphere of Hydro projects and the whole of the organization, defines the practices more or less by implication as mainly "masculine". At the shop floor, the melody of masculinity is materialized in all objects. The key technology of the furnace entails a special position. It is perceived as the most dangerous place to work. A blowout kills people. Molten metal sticks to the skin, it

burns the most terrible wounds, it spills and spits its innocent looking but deathly liquid. Like the conception of the "vagina dentata", the famous myth of the "toothed vagina", that exists in several cultural traditions. In analogy, the fear of castration leads men to protect themselves, here with safety clothing and technological tools.

The furnace in a remelt plant is at the core of the whole aluminium production life cycle. Were scrap enters, it is utterly destructed in the furnace, completely dissolved, but again, the seeds for re-generation, for new life is planted, the dead scrap is transformed to highly energetic and potential metal liquid, which flows into the casting machine, were the genesis and re-construction of new and solid form is performed and brought forth. After distribution, processing and customer uses, the metal has degenerated into scrap again, and the cycle is started anew. The furnace is the dangerous, destructive and regenerative "mother and mistress", using the powerful, energetic forces of nature, to enable new life. Primary production, which is upstream in the value chain and thus more close to nature, is recognized as a more "primitive process", and casting is considered more advanced and thus more cultural. The furnace process is more "primary". The dirty work, related to furnace work also has lower status.

At the shop floor, especially in the workings of the dangerous furnaces, we see a direct glimpse of raw nature itself melting, spuming and frothing. Powerful, lethal and seductive. Indeed, here is the cultural struggle against nature fixed in a dramatic spectacle. What is more telling of the Apollonian forces mastering this nature and forming highly potent things, vividly described in the words of Paglia again: "Western culture is animated by a visionary formalism. Apollonian formalism has stolen from nature to make a romance of *things*, hard, shiny, crass, and willful (op. cit.: 37, italics in original). Fetishism, strong acts of conceptualization or symbol-making, is according to Paglia more widespread among men. The fetishisation of things in the mode of project and production "managementality", in its combined forces of disciplination and seduction, finds some of its strongest symbolic materializations at the industrial shop floor.

An anatomy of cultural reproduction

From the earlier investigation of the "social reality of construction" (chapter six), it was revealed that to a large extent this reality was constituted in experiencing processes of "concentration and projection", characterized by wholistic efforts of "entangling" and "intensifying". That is, processes of abstracting/materializing conceptual intercommunication between all relevant bodies in projects. Now, based in the present description of the "maleness" of industrial achievements and of the sexual symbolism of material metaphors, it is possible to reflect on some of these relationships in terms of the "nature" of projects. Related to sexual symbolism, as illustrated above, a pertinent comment was once made by the notable psychonalyst Ferenczi:

> "The derisive remark was once made against psychoanalysis… that the unconscious sees a penis in every convex object and a vagina or anus in every concave one. I find that this sentence well characterizes the facts" (1950: 227).

The most basic source of man's cultural achievements, according to Paglia in her post-Freudian analysis, follows from his "singular anatomy", of his body as "sexually compartmentalized". Her explanation for the "indisputable fact of history" of male domination in art, science and politics, is based on an analogy she draws between sexual physiology and aesthetics. She argues that all cultural achievement is a projection, "… a swerve into Appollonian transcendance" (1990: 17). Like a curse, she says, men are destined to be projectors. The physiological point-blank, as it were, is the following:

> "Genitally, he is condemned to a perpetual pattern of linearity, focus, aim, directedness. He must learn to aim. Without aim, urination and ejaculation end in infantile soiling of self or surroundings… Man's genital concentration is a reduction but also an intensification" (1990: 19).

Thus, she argues, the male genital metaphor is "concentration and projection". In sex as in life, she states, men are driven forward and beyond, beyond the body and beyond the self. Different from women then, whose sexual physiological metaphor provides a pattern of experience more in terms of mysteries, of *the hidden* (derived partially from

her inability to see her genitals), and thus the acceptance of limited knowledge as a fundamental of life, and of capacity to greater subjectivity.

As described in chapter six, the acceptance of subjectivity and epistemologies of limited knowledge have by now been established at the core of human understanding through hard-pressed realizations in the new physics (although as outlined above simultaneously *countering* subject/object dualism). The argument further unfolds that men's fate is objectification and to be exiled from the center of life: "Men know they are sexual exiles. They wander the earth seeking satisfaction, craving and despising never content. There is nothing in that anguished motion for women to envy" (ibid.). Women, Paglia asserts, need not engage in intense conceptualizations to exist.

The male body in this perspective materially manifests metaphors of a movement from concentration, to projection and into the beyond. Here the efficient compartmentalizations of urination, erection and ejaculation is the "… paradigm for all cultural projection and conceptualization – from art and philosophy to fantasy, hallucination and obsession" (ibid.: 20). Alluding to the discussion above, here male bonding is seen as a self-preservation society, collegial reaffirmation through larger, fabricated frames of reference. As the work in Hydro, mostly done by men, all revolves around the forging of solid aluminum structures of immense durability, it seems meaningful also in the present empirical context to speculate that: "Culture is man's iron reinforcement of his ever-imperiled private projections" (ibid.). On the other hand, taking the metaphor of distinct sexual physiology that Paglia here utilizes seriously, one might however speculate that women, *because* of their visual restrictment in seeing their own genitals, ought to instigate rather an *enhanced* capacity for conceptualization and projection (although practical mastery also in this interpretation possibly would prove more difficult than for men).

These reflections leaves indeed open a number of questions related to the nature/nurture debate, and sex and gender as culturally constituted, especially that of capitalism as a culturally gendered process, as discussed above. The particularities of modern capitalist modes of production, with the separation between the family and the

economy, and with women relegated to the former and men to the latter, one might speculate, has brought forth specific and differentiated patterns of gendered practices from a background potentiality inherent in biological sex and the body.

Interestingly, in her ethnography of contemporary women factory workers in a "global factory" in China, Pun Ngai finds that while Maoist China aimed at producing an asexual subject, reform China constituted within a "global project of capital", "… shows interest in resexualizing the subject… tailored to meet the new international division of labor" (2005: 162). She argues that women are turned not only into efficient industrial producers, but consumers of fetishised products, and indeed themselves are turning into sexualized "fetish subjects". Unfolded through the particular historical trajectory in China, we might ponder the assertion made by Paglia that in capitalism the Apollonian things of western sex and art reach their economic glorification (op. cit.).

This chapter has described and analyzed several dimensions of how Hydro organizational processes, and images of themselves as an organizational group, a corporate body equipped with a changing "id-entity", are expressed in various non-language idioms of significance (while earlier chapters, most explicitly chapter nine, have analyzed language-based idioms). A direct interrogation and interpretion of core physical elements of the professional environment of managing in projects and in the corporation at large, has been provided. While members of the organizational community possibly would find several aspects of these analyses unfamiliar, the material methaphors have been aids in grasping more of the cultural meanings of what is *not* said, what is possibly avoided, subconscious, tacit or taboo among the actors themselves. Thus the need for the direct interrogation, although it has been supplemented with anecdotal or narrative material. The ethnographic material explored has been brought forth from areas partly outside of, but nevertheless intricately intertwined with, their main practices related to notions of "technology" and "economy". The latter dimensions have been thoroughly discussed in former chapters.

Several aspects of these organizational processes and of the way they have been incarnated in various managing practices, conceptions, language and non-language

based idioms, have been addressed in both this chapter and in the preceding presentation. In the final chapter, a reprise and review of the overall discussion and main points will be offered, and the major different threads of the dissertation will be interpreted synergistically to offer some even more general “points and punchlines”.

Chapter Eleven

11. In Good Company? Man the "Modern Maker" in the New Millennium

… it is almost a general rule that wherever the ways of man are gentle (mœurs douces) there is commerce… Commerce… polishes and softens (adoucit) barbarian ways as we can see every day.
(Montesqieu, quoted in Hirschman 1997: 60)

Hurrah! Today marks the end of the doux commerce, and I am a free man.
(Engels in a letter to Marx, quoted in ibid.: 62)

In nature we never see anything isolated, but everything in connection with something else which is before it, beside it, under it and over it.
(Johann Wolfgang von Goethe)

The title of this thesis, “Directors of Creation”, connotes several entangled issues elaborated upon in the foregoing presentation. Its immediate focus has been the reproduction of relations related to practices and conceptions constituting investment projects in Hydro. It has investigated the managing actions of diverse “Directors” and their drive to make something, to create projects and new plants. In this sense they are “Directors of Creation”. The title alludes to the saying about God as the “Director of Nature”. The analogy is fitting in at least two ways. First, the projects of Hydro are intimately related to nature in a variety of ways. Hydro thrives upon the creative, knowledgeable, technical specialists processing of nature’s resources. They are simultaneously dependant upon nature’s “blessings” for providing some of these resources, while concurrently they are challenging nature, taming and mastering nature, setting themselves “upon” nature, and belatedly, they see themselves increasingly as “custodians” or “caretakers” of nature. In all of this they are continually interpreting nature. In this interpretative quest, men are also made into objectified manifestations of nature, and thus the epic struggle and reinvention of nature and culture, both as differentiated and united, is instantiated and reproduced in particular trajectories. The explicit engagement of not only interpreting and mastering nature, but also culture, is strongly evident the “cultural-management” of projects, especially highlighted in the China projects; but also in Hydro’s own considerable apparatus and means of communicating and representing their self image, and thus their “presentation of self”, in terms of “native” concepts of corporate culture, values and, attuned to the sign of the times, through “branding”.

Secondly, the analogy fits because the knowledge tradition in which I argue Hydro projects situates themselves, the “knowledge and production-based other canon” tradition of economic theories and practice, projects an image of man different from the purely maximizing and animal-like “economic man”. Rather, the image in which they perceive themselves, is first that of homo faber; “man the maker”, man the producer, man the creator. As noted earlier, this is an image of man as potentially “God-like”, as active, creative, and compassionate, in contrast to the re-active, maximizing and

consuming “economic man”. Homo faber depicts humans as controlling the environment through tools, defining intelligence in terms of creating artificial objects, in particular tools to make tools, and to indefinitely variate its makings. It is man as the intelligent tool-making animal, and conceptually related to notions about “deus faber”, god the creator or the “making god”.

A second, and arguably not so pronounced image of man that is an alternative and complement to both “economic man” and homo faber in which they partly see themselves is that of homo ludens; the playing man. In Hydro play, however, is a serious business. It is not playing around in any nihilistic, post-modern notion of the term, of amusements, humour and leisure, but play to *make* something, to create something. It is a serious play in the modernist sense, a seriousness that I find serves as an antidote to the relativization of culture. Thus these images are reflective of the notion of joy (and pain) of creation. Economic man is, of course, also a part of the picture.

The title indicates one other major reading of the dissertation. Contemporary capitalism is increasingly constituted on the premises of finance capital. In this economic climate, Hydro projects, and indeed the entire corporation, has since the millennium embarked upon a complex and multi-layered, but nevertheless quite radical “turn to finance”. At the core of this overall shift in the global economy, I argue, is the enchanted notion of value creation without production. To create something out of nothing, as it were. The title thus also connotes the efforts of contemporary financial actors of value “origination” and “appreciation”, in short, in fictitious money and value *creation.* In the present economic predicament we found monetary value, both continuing and transforming the historical trajectories constituting relations of money forms, at the fundamental ontological level of virtualness to be “borrowed into existence”. A major change under neoliberalization has been the abandonment of the

gold standard and guarantor role of the state changed (for example in the balancing of credit and debet and thus of the control of the money supply, see chapter eight).[192]

Presently Hydro projects are, however, still embedded in a "production capitalist" ontology, and might also to a considerable extent be seen as constituting an inertia or countervailing power against the expansion of high finance and its cultural corollaries at the *fin de siècle*. But the "driving forces", to use a "native term", are strong, and thus the ambiguities and tensions also within Hydro are considerable.

Reprise and review

From a diverse set of angles and idioms, managing actions in a series of investment projects has been explored. I have tried to position these projects in the broader contexts of corporate and capitalist social and historical realities. In so doing a description of some important aspects of contemporary capitalist conjunctures has been offered. Contingent upon the presently dominating accumulation processes of neoliberal "financialization", qualitatively different than the one constituting main Hydro acitivities but nevertheless providing constraints upon them, the production of wealth and the reproduction of economic inequality and asymmetries of power has also been investigated. Hydro's "glocal assemblage" investment projects have proved to be a welcoming case for exploring what I believe to be some of the core dynamics of contemporary "global" culture, due to the fact that they are ambiguously positioned along a range of fundamental dimensions that underscores the present predicament.

The contemporary Hydro project practices and organization is the offspring of several distinct historical trajectories. First, the corporate capitalist organization that emerged and conquered the world in the free enterprise system from the turn of the twentieth century; the vertically integrated, bureaucratically managed, multi-unit business enterprise (Arrighi 1994: 294). It is also as a second path, however, marked by

[192] The dollar as the world's "reserve currency" and how it after the abandonment of the gold standard at least partly became pegged to oil, as indicated in the notion of the "petrodollar", is outside the scope considered here.

the most fervent contender to the US capitalist corporation, namely the German model of corporate capitalism; the horizontally integrated, nationally oriented business form with active involvement form the government in support of the "… cohesion, modernization, and expansion of the resulting technostructure" (ibid.: 290). Thirdly, Hydro practices are characterized by the conditions of national culture pertaining especially to the "Norwegian democratic and cooperative industrial work life model", with it's socio-technical perspectives, democratic ideals of work life relationships, participative design of work processes and psychological job demands (cf. Emery and Thorsrud 1976).

As highlighted by the social reality of investment projects, Hydro encompasses a tension between its pecuniary and technological rationality. In the neoliberal age of high finance this tension has been reconstituted in new ways. This relationship has been present in Hydro throughout their century old history, since its inception as a industrial, entrepreneurial company (represented by one third of its co-founders, Sam Eyde); with its basis in fundamental and ingenious science (represented by arguably Norway's most prominent scientist ever, Kristian Birkeland); and by the introduction of a new type of financial actor in Norway (represented by Marcus "häradshövdingen" Wallenberg and his finance family). Through its "German oriented" approach to technology, "teknisk and "teknikk", both through its NTH relationship and later its acquisition of the aluminium company Årdal and Sunndal Verk (ÅSV), it also inherited a "Norwegian/German" tradition of technological rationality.

We might interpret Hydro projects and wider practices in a British/American tradition in its formal and pecuniary aspects, in its organizational form and market orientation. That is to a large extent its efforts of suspending and superseding the market through its "vertically integrated", professionally "managed" multi-unit business approach (cf. Arrighi 1994: 288-304), and in terms of its external pressures (e.g. "high finance", shareholder returns, internal rents etc.). On the other hand it can be seen more as German/Norwegian in its production and knowledge based industrial "content" aspects, and in its metaphysical orientation. That is, in its technological or instrumental

rationality, its combined homo faber/ludens orientation, its creational and production approach; its activities seen in light of cultural and moral values conducive to wealth and welfare creation and the progress of society; a modernist rational, but likewise morally spirited obligation.

Creational capitalism

Our discussion has instigated the necessity of differentiating quite sharply between fundamentally different activities in the capitalist system. As reflected both in Veblen's (1904) distinction and opposition between "the captains of finance" and the "engineers", and in Schumpeter's difference between the financial (or economic) and the entrepreneurial function (1939, Ch. III), production and finance capital are based in two very separate sets of motives and criteria by which various actors function within the capitalist system. Following Perez (2002) the purpose of finance capital is to make money from money (MM') and thus to serve as agents for reallocating and *redistributing wealth*. As our discussion has shown, the particular form of this redistribution in the globalized, neoliberal age of financialization is by Harvey (2005) aptly termed "accumulation by dispossession" and by Hudson (2003) "super imperialism". By contrast, the term "production capital", again following Perez, "… embodies the motives and behaviors of those agents who generate *new* wealth by producing goods or performing services…" (op. cit.: 71, italics in original). I key finding then is that *redistribution*, a core concept in economic anthropology but mainly to characterize "archaic", non-capitalist societies, is indeed the most adequate label to describe the highest levels of contemporary global capitalism (see more below).

As shown above Hydro investment project are more or less "pure" instantiations of a production capitalist logic. As production capital their purpose is to create production capacities in order to produce – and in turn to be able to produce more. This conforms to the MCM' variant of the Marxian formula for capital. As an embodiment of production capital, Hydro investment projects are at the commanding heights of an essentially knowledge-based "creational" tradition. For production capitalists,

knowledge about processes, products and markets are at the basis of its success, while the knowledge of finance capital needs only to be linked to profitability concerns. In line with the knowledge-based production tradition their objective is to increase their profit-making capacities by investing in technological innovations and the expansion of production. Here finance is an absolutely necessary enabling mechanism, but it can easily be separated from the actual processes of wealth creation in which their investment projects is positioned at the core.

This was vividly illustrated by various Hydro values and "talents", like their concept of "social commerce" (see chapter nine), integrating their economic function with "making good" for society. Throughout historical capitalism the necessary relationship between production and finance capitalism has taken on various configurations from symbiosis at the one end to parasitism at the other (Reinert and Daastøl 1998). The spirit of our neoliberal capitalist age, however, seems to be that of parasitic finance capital. The extractive redistributors has come to be perceived, like consumers at another end of the same dimension, as the wealth creators akin to the tail wagging the dog.

Hydro is a true offspring of the fourth systemic cycle of accumulation (see Appendix II). It was born in the beginning of a long period of material expansion, an MC capitalist phase in terms of the main types of capitalist accumulation forms, and thus of welfare production. What I have studied is what has happened with Hydro projects, and the Hydro organization, in the neoliberal age of high finance (CM'). As it turns out, Hydro has adjusted to the increasing claims and constraints of the financial economy, but so far, we are bound to conclude, Hydro has not switched into the model of financial capital accumulation that defines the period of financial expansion (MM').

Several elements characteristic of a "turn to financialization" clearly has been embedded in the Hydro organization's approach to investment projects (and other processes). For example the designation CVP (capital value process) to identify their prime decision support methodology of investment project management. The focus from the late 1990's onward on profitability, on shareholder returns, the "value based

management" model, the plethora of financial and accounting control concepts, financial risk management, financial incentive models, the expanding use of market mechanisms internally (e.g. the trading of engineering hours), and the relative objectification or "entification" of their cultural practices (see chapter nine); illustrated by their "culture-building" project being directed from worker-management relations towards management-investor relations, and of the "invention of identity" through their "Hydro Way" program. These efforts could all be seen as partial answers to the emergence of a finance led "economy of signs and appearance".

However, Hydro has not switched into a financial MM' corporation. It has not become financialized in the sense that Hydro does not invest its stock of money in financial speculation or in the credit system (other than as a risk moderator to secure their productive investments from volatile changes in the market). They are still routinely reinvesting the major part of their surplus of capital in creating new "projects for production". As we have seen, concerns related to the return requirements, as expressed in the "internal rent" of profitability of projects, has been voiced. With the high return requirements, how long can Hydro continue investing in productive projects? As documented, Hydro has in the last years strategically been focusing, that is directing their project investments, towards the up and midstream areas of their business, were they are yielding the highest returns. Nevertheless, their economic activities are clearly marked by focusing on what they call "source business". This is business morally legitimated as central to and deeply embedded in the infrastructural functioning of society. As one manager said: "Hydro could never produce tooth paste". Source business does not sit particularly well with the contemporary "virtual" version of "high finance" and consumer culture.

Furthermore, their projects and production activities focuses on both innovation and "optimization". The latter is targeting areas that under mainstream, "dismal" economic science logic would reap the lowest return on capital and a falling rate of profit, due to decreasing returns. However, employing inventions (knowledge) and innovations (technological change) and synergies Hydro creates value added activities

in these "barren zones" of economic natural resource space; and turns them into increasing returns activities which yields profitable return on capital, and then in turn capital accumulation for reinvestment in new projects. This last point of innovative optimization also has moral underpinnings. A morality of moderation and frugality has been and seems still to be constitutive of Hydro cultural notions. That is one reason why the stock options case of managerial compensation excesses caused such a stir.

Hydro and the right kind of globalization

The analysis sought to explain some of the consequences of the liberalization of finance that has occurred since the complete abandonment of the gold standard in 1973. A host of deregulation activities since the late seventies, enabled by the revolution in information and communications technology, has led to widespread innovation and expansion in finance instruments and finance's overall role in the economic, societal and cultural relations. Clegg et al. (2004) has characterized this accelerating development as finance capital taking on a hyperreal quality. Many authors have suggested that the finance system now has achieved a degree of autonomy from real production, and as Harvey notes, that under conditions of postmodernity capitalism has become dominated by an economy of signs rather than things (1992: 102). As I have documented, the present predicament of the globalized and financialized economy has been more of a process of a *belief* in a relative autonomy of the financial system from "real" production. It is simulated in the sense that its expansion and effects are indeed real, it has been inflated by real faith. However, as shown by both historical and contemporary statistical data of "extractive redistribution" and economic inequality, finance wealth without production is a projection of an enchanted fantasy.

We have also seen that another of the presently popular terms of capitalism, that of "innovation", needs to be qualified. In the contemporary, it is the financial sector that has delivered innovations at the highest speeds. Although undoubtly a portion of these innovations could be seen as beneficial to the economy and society, a large part has projected capitalism into the realm of the hyper-real and surreal. For innovations to be

socially beneficial in terms of wealth creation and distribution, they need to be linked with increasing, transforming and dispersed productive capacities. In the contemporary the financial innovations seem mainly to have been vital in enabling a redistribution of wealth from both the "havesomethings" and the "havenots" to the "havetoomuchs". In Hydro these new finance measures have been utilized as "risk management" devices to reduce the risks involved in their productive investments.

In this light we can reassess the neoliberal financialization adjustments and adaptions made by Hydro in quite another light. While both production and finance capital are constantly facing various types and forms of risks at different junctures, the two forms of capital are radically differently positioned to escape them. Due to its liquidity finance capital can choose more or less unlimitedly on how to invest and withdraw its money, and thus avoid risks. Production capital is, however, path dependant to historical trajectories. For example the Hydro Qatalum project is a long-term investment and needs to develop robust strategies for facing risks. Most relevant here, however, is Hydro's need to "lure financial capital". If they do not succeed in this enterprise they can do nothing but face failure. As our description above testifies, Hydro has managed this luring of finance to a remarkable degree, while kept strictly to the creational virtues of production capital. In the last thirty years or so of excessive casino style financialization, this balancing act performed by Hydro must be interpreted as impressive. Hydro has managed to keep hold of the inherently uncommitted, "disloyal" finance capital.

As Perez notes: "Financial capital is footloose by nature; production capital has to face every storm by holding fast, ducking down or innovating its way forward or sideways" (op. cit.: 73). This is exactly what Hydro has done throughout its hundred years of continuous history. In the contemporary atmosphere of the combined falling rate of profit and financialization pressure, it seems like somewhat of a feat to have kept to its industrial production mandate. One indication of this focus is that it seems safe to estimate that the company has been the single largest corporative spender of money for research and development in Norwegian history. On the other hand, it is not evidently

certain, although some of their own traders were confident of the issue, that Hydro could have achieved an even higher profit rate if they indeed had (partly) shifted into pure financial (MM') business. International mega corporations like GE and large Norwegian companies like Orkla, both long-term strong industrial actors, have moved into various forms of "financial business".

This robust resilience impels us, however, to draw some quite radical conclusions. In light of the fact that the profit rate for financial corporations has by far exceeded that of non-financial corporations in the rich world the last decades (cf. Duménil and Lévy 2004), the premises from which the production economy of Hydro is constituted must be reassessed. A conclusion that present itself is that Hydro's determined focus on investment projects for production in an age of high finance, more or less *disqualifies* them as being defined as a *capitalist* corporation in the strongest or most "purist" sense of the term. While taking into account that Arrighi more often than not uses the terms "production" and "trade" interchangeably, he states that:

> "An agency that reinvests routinely the profits of trade in the further expansion of trade as long as the returns to capital so invested are positive cannot be defined as "capitalist" by any stretch of the imagination. A capitalist agency, by definition, is primarily if not exclusively concerned with the endless expansion of its stock of money (M)... An agency of capital accumulation is capitalist precisely because it reaps large and regular profits by investing its stock of money in trade and production or in speculation and the credit system depending on which formula (MCM' or MM') endows that stock with the greatest power of breeding" (1994: 229-230).

Following this analysis Hydro needs essentially to be considered a *non*-capitalist corporation in this radical sense of the word. However, as I have been arguing with Hydro as an example and more broadly through the concept of "the other canon", capitalism(s) comprises multiple and partly conflicting trajectories and tendencies. As shown, Hydro has held on to the MCM' variant, refraining themselves from turning to the "purest" form of the capitalist formula – the spirit of the day in two letters: MM'.[193]

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[193] Here as used in the meaning of for example Arrighi (1994), were MM' denotes finance capital.

Hydro has not yet chosen to shift to pure financial business, even in the present predicament of financialization.

In the present atmosphere of capitalist accumulation, the production capitalism of Hydro may be seen to be under pressure both from "above" and from "below". From above is the pressure provided by the financial investor community to uphold a rate of profit that is comparable with purely financial speculation. From "below" is the pressure of the structural crisis in the current phase of capitalism, where the material and technological base upon which it rests is in crisis, with the overall result of a falling rate of profit in non-financial corporations.

Adopting Braudel's (1984) view of capitalism as the "anti-market" top layer of a three tier structure with the "material" base at the bottom, the market in the middle, and capitalism at the top, we see that Hydro as a market-oriented, industrially based technology company must face this double pressure by "luring" finance above, while continuing to create *new* wealth through taming nature (and culture) by ingenious use of knowledge and technology from "below" (see figure 45). This is a balancing act of considerable challenges.

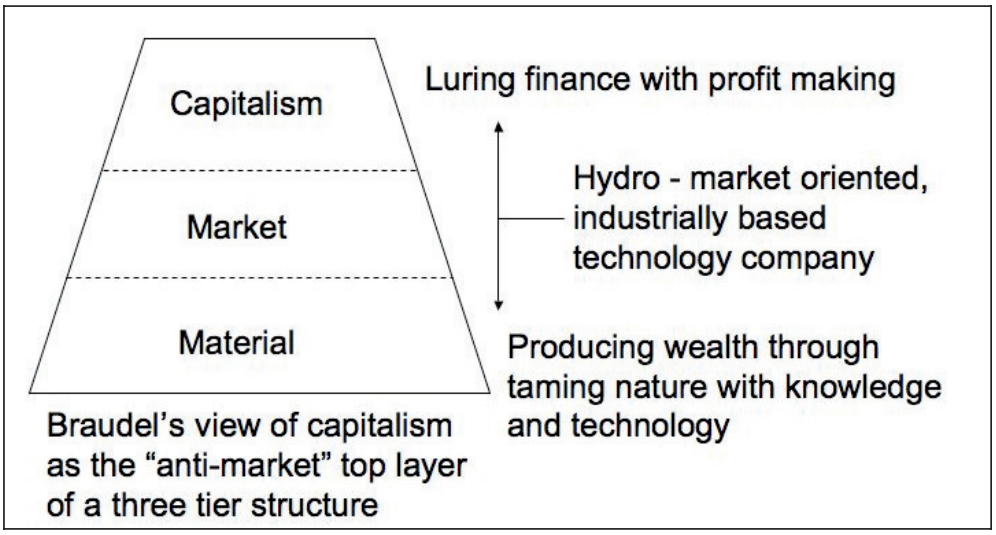

Figure 45. Positioning Hydro in the middle of Braudel's scheme with capitalism in its "purest" form at the top of a three-tiered structure.

An even more appropriate figure, according to the present analysis, would arguably be to place "knowledge and production" alongside "market" in the scheme above. In this way Hydro's "other canon" tradition would have been emphasized. As it now stands, the "market" focus alone could easily slip the analysis too much into a "standard" exchange based canon of thought.

Hydro's adaption the last decade or so to the neoliberal tenets characteristic of our time of "high finance" nevertheless illuminates fundamental ambiguities. At the first level in Hydro's own approach to contemporary industrial capitalism, and at the second level, the tensions and paradoxes embedded in the global system of accumulation itself, as it seems to be approaching the possibly most fundamental crisis in the entire 600 years or so history of capitalism (cf. Arrighi 1994; Appendix II). A pyramid describing the present financialized predicament could arguably comprise the same three levels, while turning the pyramid form upside down. With the material peak pointing downwards, an incredibly huge top layer of financial capitalist wealth have expanded at the top.

"Mongrelizing" management

In terms of the concept of "managing" we might say in view of Hydro's recent history that it was actually not until the late 1990s and the turn of the century that the democratic and participatory endowed technocratic, engineering based managing culture in Hydro was seriously challenged. Their major efforts from 1999 at all levels and related to major aspects of their practices, of introducing "finance control" mechanisms for steering both project work and other types of corporate work and functions, including the "capital value process", key performance indicators, personnel policy in terms of compensation incentives like the stock options program, have challenged the engineering based technocratic managing hegemony and partly supplanted it with a finance control regime. In the contemporary a mixture of a

technocratic and an "accountocratic" rationality, to coin a term derived from the finance world's arguably most persistent discipline, seems to reign and legitimize managing. Accounting has in a self-reinforcing cycle climbed to the high peaks of corporate management, more or less globally in concurrence with the emerging neoliberalization the last 30 years or so, and has in turn been enabling a shift from "production" to "finance" controls (see chapter seven).[194]

Nevertheless, there are still other managing practices and knowledge trajectories maintained in Hydro. As we have also seen, the managing practices in Hydro are continuing to be characterized by the particularities of the "Norwegian model" of moral eigenvalues of "democratization", "humanization" and "participation", as forged among other things through the "Norwegian Industrial Democracy Program" from 1962. This was particularly well illustrated in the Xi'an project were such Hydro values were highlighted in the efforts of establishing a plant in China. Although "hybridized" in actual cross-cultural project practices, we have in these cross-cultural managing crossroads been able to trace a managing trajectory in Hydro that constitutes an idiosyncratic tradition of managing in the contemporary; resembling many aspects of, but which is different from the American, German, French and British. If we leave out the obvious problems of homogenizing national cultures of managing, the Norwegian tradition, instantiated in particular trajectories by Hydro also in their contemporary global project "assemblages", serves as an alternative that has been overlooked in management studies. As such, I have sought to "mongrelize" conventional ideas about "management" and managing rationality in the contemporary debates.

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[194] This is not to imply, however, that accounting is a novel invention. In his magisterial four-volume work "The social history of art", first published in 1951, Arnold Hauser discusses the emergence of capitalism and some fundamental changes that had already come about in the Renaissance: "The enterprising spirit of the pioneers lost its romantic, adventurous, piratical character and the conqueror became an organizer and an accountant, a carefully calculating merchant, managing his business with prudent circumspection" (1999: 19). On this note we might suggest that the three elements of adventurous entrepreneurial spirits, technocratic and "accountocratic" rationality have been constituting characteristics in various configurations since capitalism's inception. I will also argue that Hydro in the contemporary comprises all three of them. Indeed, an earlier tentative main title of my thesis was "Quixotic and circumspect".

Qualifying capitalism

Through discovering characteristics of managing actions in Hydro investment projects we have found that not only has managing itself been differentially legitimated both historically, cross-culturally and now in the contemporary; but also capitalist economic activities more generally are *qualitatively* different in terms of their wealth creating potential and moral underpinnings. Thus capitalist corporations *are* different. And they can be normatively assessed differently. Not only is there a difference between financial and non-financial corporations, each linked with two radically different processes of contemporary capitalism, that of production and financial capitalism, there are also huge differentiations both in the relationships and inside of these two broad categories. In Hydro we have seen the ambiguities and tensions created by the partial substitution of a particular democratic and personal participatory, technocratic managing tradition with what I have been arguing is an emerging financially based *accountocratic tradition*. The turn to financial management has furthermore been described as a trait of the whole globalized economy.

Anthropology has documented how economic activities in small scale or so-called pre-modern societies have been of qualitatively different character, and often relegated to different value spheres (cf. Bohannan and Dalton 1965; Barth 1967). As discussed earlier, a most cited classification is that of Polanyi's three main forms of exchange: market (synchronous exchange), redistribution (delayed and asymmetrical or vertical exchange), and reciprocity (delayed and symmetrical or horizontal exchange). Although in Polanyi's conceptualization the three main forms are dynamic in the sense that they contain components of the others,[195] and thus avoids being a mere classification, it seems like economic anthropology, almost as an unintended

[195] To be more precise, in Polanyi's scheme primitive or tribal societies, which are seen to be mainly reciprocal, also often show elements of redistribution. And on the other hand, in archaic societies that are mainly characterised by the redistributive form of exchange, reciprocity occurs. Furthermore, these two main forms are likewise still continuing under "market exchange" capitalism. Reciprocity for example in types of gift giving, and redistribution in terms of for example state tax revenues that are redistributed through the various branches of the government.

consequence of its favored economic objects of study, has unfortunately lumped modern capitalist activities together in all-encompassing categories like "market exchange".

Although at some level this has arguably been warranted, I have showed the necessity of differentiating qualitatively between types of economic activities, based on value considerations, also in the "core" capitalist economy. As noted above, it is rather particular forms of *redistribution* which constitutes the hallmark of the highest levels of contemporary capitalism. The thesis identified key reasons of why we lack a vocabulary describing these qualitative differences, chief among them the orthodoxies of mainstream economics and the exclusive focus in most economic theorizing, anthropology being no exception, on forms of exchange, rather than on forms of creation and production.

As discussed earlier, underlying most economic theorizing of capitalism, Marxist as well as liberal or bourgeoisies theories of value, is the purely quantitative concept of labor-time. Economic activities are measured and made commensurable by labor time accounting. However, as we have seen, different economic activities vary fundamentally in their potential to absorb new knowledge and technology, in their learning potential, and thus in their overall *potential* for "value creation"; to use the Hydro term designated specifically for the *early phases* in their investment projects and more generally being a strong managerial and Hydro representative idiom.

It has been identified that Hydro's industrial business is situated exactly in those "source" activities that has a vast potential for creating much wealth. In the moral discourse in Hydro, their "source" wealth creating activities, and its implications for society, is a major justification of the company's existence and self-identification. On the macro level, on the one hand it has been argued that it is not possible for a country in a capitalist economy to prosper by for example farming or simple services. On the other hand, we have shown that the whole capitalist logic of accumulation is in jeopardy when it reaches its own "wurthering heights", when its reaches stages of such self-suggestiveness as to believe it is able to create value without productive input. At these

times, a period we are in the midst of, history show that a recurring theme is the finance economy's expansion and more or less decoupling from the "real" economy. With Braudel and Arrighi, we propose that this is a sign of "autumn" in the capitalist accumulation cycle (see Appendix II).

We also found that the current crisis, signified by the expansion of the finance economy, coincides with the turning point crisis in the Schumpeter-Freeman-Perez techno-economic paradigm shifts (cf. Perez 2002; Appendix II). In the empirical material presented in the foregoing, the phase of "high finance" was marked by a rhetorical shift from a focus on production, to concepts of "value creation", and finally, to "value assessment" or "value appreciation" and "value origination". When assessing and "originating" values takes on its own life, seen as more or less independently from the productive realities, we may talk about an "age of enchantment". Analyzing the contemporary capitalist predicament, as it is formed in the image of finance, we are forced to conclude, in opposition to notions of the "disenchantment of modernity", that it indicates a form of re-enchantment of the world.

We have seen how the global economy is characterized to a large extent by "pure" financial exchanges, and not the least how (virtually real) money itself is "borrowed into existence" in a new relationship between money and dept. When the whole capitalist system is increasingly characterized by the "waving of the enchanters wand", to paraphrase Comaroff and Comaroff (2000), with the dramatic economic inequalities as a result some might propose in perhaps an unduly exotizing vain that magic, arguably even "black magic", is inserted at the core of the capitalist accumulation mechanisms itself. Indeed, anthropologist Øyvind Eikrem (2005) argued in his PhD thesis for the "mythical and magical dimensions" in modern economic life, and Cleverley (1971) explored the relationship between managing and magic.

With such conceptual prospects, the amazing Freudian connection between money, psychopathology and anality easily comes to mind. As Harvey notes in relation to "the passage from modernity to postmodernity": "Baudrillard depicts postmodern culture as an 'excremental culture,' and money=excrement both in Baudrillard's and

Freud's view (some hints of that sentiment can be found in Marx)" (1992: 102). For example, in his early writings Marx talked about money as the "universal whore" (cf. Giddens 1990: 22). Money-making as devilish "filthy lucre" is a recurring philosophical theme of historical capitalism (cf. Brown 1991; Hirschman 1997). The unbeatable height of psychoanalytical analysis of the "dirty business" of money-making, is arguably the immortal conclusion of Sandor Ferenczi's "The Ontogenesis of the Interest in Money": "After what has been said money is seen to be nothing other than deodorized, dehydrated shit that has been made to shine" (1950: 327).

With Hydro as an example, it has been illustrated how the non-financial industrial corporation, the Schumpeter-Chandlerian firm at the core of the twentieth century capitalist wealth creating machinery, at the millennium moment has become the dog being wagged by the finance tail. The sometimes symbiotic relationship between finance and production, has become asymmetrical and parasitic. Many of the socially detrimental effects of this form of "capitalism unleashed" has been recorded in the foregoing presentation. Hydro's activities can thus be positioned at a mid-level, of knowledge and production based, technology and innovation driven activities, where moral and cultural considerations are taken into account. They are "Directors of creation", indeed, but not creators of *any* creation. Neither toothpaste, nor decoupled fantastically reified and "entified" finance innovations. As such Hydro constitutes an alternative force in a contemporary situation where the economics of the "world system" is analogous to the polarization between a rich elite and the poor masses of the "ancien régime" in France during the 1750s (cf. Hart 2002); at odds with the rising of a "new feudalism" akin to pre-industrial society (cf. Comaroff and Comaroff 2001: 291).

Although Hydro since about the millennium shift has changed in many ways by the increasing finance hegemony in the global economic system, they still stand out as exemplary manifestations of the Schumpeterian-Chandlerian real-wealth creating corporation. They are in this sense capitalist Directors of "real" creations. When the capitalist logic has reached its fetishised, enchanted moment of *value origination and appreciation*, creating money out of thin air, as it were, Hydro has through subtle

balancing arts managed to “hang along” while not “abandoning reality”. The value of Hydro had a sixfold increase in just a few years after the millennium. Although being responsible for parts of this value increase themselves Hydro has more importantly been competently riding the “global wave of financialization”. This has been a wave that has created severe operating constraints on the company, and a wave that has furthermore characterized the entire capitalist economy at its present financial “wonderful moment” of crisis, as Arrighi describes it (op. cit). Nevertheless, despite their successful maneuvering in a financially based economic climate, Hydro has stuck to its industrial and productive capitalist guns. That of doing investment projects for creating productive capacities and corporate and societal wealth through interpreting and mastering both nature and culture by immaterial powers of the mind (and money), and the material powers of the body and the machine: of knowledge, technology and capital.

As such, continuing the exotization somewhat, Hydro can be seen to be doing the “real magic”, not that of the conjurer or the alchemist, but utilizing that of its silent powers based in what especially chapter six identified as an ontology of “grounded potentiality” (more below). In this “fusion of nature and culture”, their productive creations are reproduced and transformed anew continuously. Coupled with notions of social values and contingent moral conceptualizations, they contribute substantially to wealth and welfare creation at the societal level. As such the relationship between their brand slogan “progress of a different nature” and the practices performed in the name of the company might be fitting.

Incarnations of a different nature?

A recurring theme has been the interpretation and mastery of both nature and culture. The picture tells something about the notions of the human and non-human, about creatura and pleroma (cf. Bateson 1979), that is prevalent in Hydro project practices and corporate cultural artifacts and idioms. It tells a story about a view of nature, not only like the romantic Rousseauist naturism which has dominated western debate in many

disguises, but taps also into the cultural tradition of paganism and that which portrays nature also in terms of its cruelty, evilness, darkness, the diabolical and dangerous. Hydro's favorite slogan emphasizes this point: "Progress of a different nature". Nature is to be mastered and changed. In this way cultural progress might be brought forth. In their "Hydro Way" profiling material nature is portrayed as wild oceans and strong forces, to be aesthetically enjoyed, interpreted and technologically mastered. And they work close up, with the "source" forces of nature. Again, Hydro could "never have produced toothpaste".

The beauty of nature is not unacknowledged, however, but it is not an innocent beauty, it is a beauty also of devastating lure and power. Their cultural technology and products are perceived as saving and creating powers and are rather compared with products of art, placed in museums as well as in the everyday life of humans as cultural beings. Their focus in recent years on environmental issues does not discard this picture. Rather, the saving power, as reflected upon by Heidegger (1977; see especially chapter five), of their "technologies" are highlighted at a time when nature has become cultured, when the distinctions between culture and nature have blurred again. Hydro seem to recognize also the danger, in Heidegger's sense of technology, inherent in their technological practices, and at a time of environmentalism and personal self and identity constructivism, where nature has been objectified as a cultural product to be re-stored and remade, Hydro has been able to adopt its narrative to also come to aid rather than just tame this objectified and cultured nature.

Before the environmentalist and post-structuralist movements, when distinctions between nature and culture were stronger, the Hydro cultural Apollonian struggling with, tapping and taming the forces of a Dionysian nature was more straightforward. They tamed the frowning waterfalls and cataracts of nature and conjured food out of thin air. Nature was up to a fight, and Hydro paved the way for the large-scale machine revolution and industrialization process of Norway, and thus for the wealth and welfare production in the emerging industrial welfare state of Norway. As noted by one Hydro member: "The very premise of our existence was to help found a nation, not just make

money" (see chapter nine). In the contemporary public discourse nature is perceived as fragile and in need of cultural care. Nature's supreme danger, nevertheless, is found not far below the surface. If not cared for, it will come crushing down upon humanity with all its devastating force.

This slight change of perception, in recent years, have also been accompanied by a slight change in Hydro rhetorics, were their environmental impact, their danger versus saving power, are compared and assessed in a balance sheet of morals. In recent years, for example, Hydro has embarked upon new adventures in alternative and renewable energies like solar and wind power.[196] In addition to their continuously increasing productivity, they have also reduced their greenhouse gas emissions, per kilo aluminium produced at their Norwegian smelters with 65 percent the last 15 years.[197] As Wagner notes, pollution is Culture seen from the standpoint of nature (1981: 70). Thus, the environmentalism also of Hydro might be seen as a struggle between culture and culture (nature objectified).

The preceding presentation also leads to some final reflections of the centuries old discussion of the characteristics and relationships between passions, interests and reason, of "human nature", and its impact upon society and humanity. For the present scope, a particularly relevant stream is the discussions in relation to the emergence and development of capitalism. In his fascinating review, Albert O. Hirschman (1997) has described the complex philosophical discourse accompanying the emergence of capitalism, were the economic "interests" came to be constructed as the way destructive passions were tamed and transformed to become custodians of the public good. He shows how private vices related to the "love of lucre" and the acquisitive instinct involved in commercial activities meddled self-seeking with rationality in the concept of "interested affection" or "interests". As long as it defeated other and more deadly sins and passions of human nature, such as ambition, lust for power or sexual lust, these

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[196] Investing for example in projects developing "ocean windmills" and in the solar company Norsun. See http://www.hydro.com/en/Press-room/News/Archive/2006/November/17087/ (November 1, 2007).
[197] Eivind Reiten, "Askeladden og den globaliserte økonomien – Hydro i endring". Kristofer Lehmkuhl forelesning, Norges Handelshøyskole, Bergen, September 26, 2007.

vices of greed and avarice could be transformed into collective virtues to the benefit of society as a whole.

Money-making and commerce became a calm passion, innocent and *deux.* This is a position revealingly illustrated by a remark from Dr. Johnson from 1775: "There are few ways in which man can be more innocently employed than in getting money" (quoted in Hirschman 1997: 58). In a similar vein, advocating the acquisitive drive as a calm but simultaneously strong passion, the leading philosopher of the time, David Hume, hailed capitalism in his essay "Of Interest": "It is an infallible consequence of all human industrious professions, to … make the love of gain prevail over the love of pleasure" (quoted in Hirschman 1997: 66). Capitalism was seen by Hume to enable and activate some benign human proclivities while repressing and perhaps, as Hirschman notes, "… atrophy the more destructive and disastrous components of human nature" (ibid.). This view is echoed in another language in the thesis adhered to Adam Smith and the premise followed in mainstream standard economics, that individually ego oriented acquisitions in sum produces the common good.

Some of the dynamics of passions, reason and interests were found in the symbolic analysis of project and production material metaphors and rhetorical representations in Hydro. The good, rational and Appollonian principle of moderation and conservationism, of "nothing in excess", was expressed in various idioms; for example in their values of thrift and frugality, in the focus on "source business", in "optimization" of resources, and in the noise created by the stock option excesses. In these dynamics we can moreover glimpse an implicit acknowledgement in Hydro of also a pre-romantic notion of human nature's darker sides, of far from harmless passions. Furthermore, we found these themes vividly illustrated in the symbolic analysis of various material metaphors in chapter ten.

Positive and negative denotations of international commercial activities and the management of such have been evoked throughout history in a long train of Western thought. Indeed, money and commercial activities" display cross-culturally and transhistorically pattern of doublness, of denunciation and idolization (cf. Bloch and

Parry 1989). For example, Jacob Viner traced the idea of a favorable interest of providence in international trade back to the fourth century A.D. (Hirschman 1977: 60). In a similar vein we might interpret Paglia's contention that capitalism, "gaudy and greedy" but also glorious, can trace its roots through aesthetics back to ancient Egypt (1990: 37). As Paglia's statement also signifies, regarding the omnipotent contemporary economic force, best known today as "the corporation"; businessmen, politicians, academics and the "common people" alike, have been highly suspicious of this organizational form since it's emergence in the late sixteenth century. Indeed, following the collapse of the South Sea Company, and tired of the stockbroker tricksters swarming in London's Exchange Alley, the English Parliament banned the corporation for fifty years in 1720 (Bakan 2004).

While a company seen as a form of purposeful organization engaged in economic transactional activities, arguably might be said to have been a hallmark institution in every society throughout cultural history, the economic organization of the corporation has a very specific cultural process of origin and trajectory of development. The two decisive moments in its genesis with which we are concerned here was first the idea conceived of in the mid eighteenth century, of separating company ownership, the shareholders, from directors and managers. Secondly was the victory of the idea of "limited liability" on behalf of investors, and subsequently the creation of the "limited-liability joint-stock company" as a legal person (that can be sued) from the mid nineteenth century (Mickletwait & Wooldridge 2003; Bakan 2004). And not only can the corporate body be sued. It comes with full-blood emotions. In the period when the media focus related to the Hydro options case raged at its worst, Reiten supposedly announced in a newspaper interview that: "The biggest burden is nevertheless to see that our employees and Hydro as a company is in pain" ["Det som likevel er den største belastningen, er å se at våre ansatte og Hydro som selskap har det vondt"].[198]

At the time of inception of the first idea of separating owners and managers it was by many believed to be a recipe for corruption and scandal. Adam Smith, for

[198] Dagens Næringsliv, August 8, 2007.

example, warned about this in “The Wealth of Nations”, because managers could not be entrusted to “steward other people’s money”. “’Negligence and profusion’ would inevitably result when businesses organized as corporations” (in Bakan 2004: 6). And indeed, while managers have had the upper hand in corporate affairs throughout much of the period of “organized capitalism” in the twentieth century, with neoliberalism and the financialized shareholder surge, power has arguably changed hands again. To a large extent managers were at least tried “bought” by incentive schemes like stock options. The managers became owners themselves.

However, as the present work has documented, there are multiple trajectories both in terms of managing corporations and in terms of capitalism as a world system. Through investigating managing actions in and in relation to investment projects in Hydro, as well as their more explicit efforts of communicating and reproducing their own cultural relations and idioms as the “Hydro corporation”, I have argued that managers incarnates, and projects and the corporation instantiates, a version of the “forgotten tradition” of the “other canon”. At a moment of almost unimaginable excesses made in the name of the “standard” tradition, celebrated at its moment of neoliberal financialization, Hydro and managing actions therein might still properly be said, with a twist on their own favorite “progress of a different nature” slogan, to represent “incarnations of a different nature”.

The ”poetics of projects”

From investigating technology and its realm of instrumentality, knowledge configurations and forms of causality, we came to see the “social reality of construction” as a deep interconnection between technology and art. Harkening back to the Aristotelian notion of Poiesis (Tekhne), which included everything profanely “artificial” and “creational” from what today is considered both “fine arts” and “industrial production”, it was found that “technology” in its present constitution in Hydro projects is a much more polysemic notion than implied in ideas about popular

conceptions like technology as "applied science". "Technology" in Hydro was seen as both morally and aesthetically embedded, connected both to the present realms of the somewhat sacred "arts" domain and the political and normative. As such it was seen as constituted by elements from all the modern differentiated value domains of the good, the true and the beautiful.

Moreover, at the heart of project Poiesis was unconcealed the vital ontology of *potentiality*. At all levels of project work, and also in many aspects of aluminium production, the experiences of creating, changing and transforming "things" "in and out of existence" is formidable. And while working conceptually or materially with "heavy", solid, hard and strong elements of technology and matter, the experience that even these "most durable" things, are brought forth into existence, or destructed or fade out of existence, inscribes an ontology of potentiality. That is, of processes of abstracting/materializing potent objects "out" from a background of potentiality. These processes might be termed acts of conceptualization, externalization or objectification.

A major finding of the present study is thus that managing these "global" investment projects to large extent is about "managing potentiality". From the role in bringing about an "atmosphere of enabling", co-constituting and "tuning in to" collective intentionality, to value chain "potential flows" and the transformations or *transductions* of "solid matter". The concept of "transductions" was, as described in chapter five, proposed to signify the conversions and mutual constitution of "materialities and meanings". Managing investement projects is very much about enabling the *projecting of potentiality into reality* (or more precisely of occasioning and unfolding potentiality from some implicate levels of reality to more explicate and manifest levels of reality). To be successful in all of this, the study suggest that the managing done to a large extent must come "frome behind" or "below". The realization of potentiality, it seems, cannot be enforced from above or "directed directly", and need rather to be realized as a side effect, indirectly and by necessity in some forms implicitly. This is a kind of managing we might label *infra managing* – "infra" from Latin meaning "below". For example some of the complex notions related to the Hydro

"native concept" of "faglig ledelse" (professional/knowledgeable managing) points in this direction. One version of this kind of managing might be the "managementality" (Sørhaug 2004) I have discussed earlier, of getting someone "to want to want".

Although possibly related, another version might focus more on the co-creations that are brought about in an intersubjective dialogue and dynamic "dance" of *tuning* into the more implicate, interrelated and undivided orders of reality. In this sense we might characterize infra managing as *mediations and meditations*. Etymologically mediations refer to both interventions and connecting links, to the bringing about (of effects), and to means of conveying. It also connotes the indirect connections characteristic of the type of managing I seek to describe here. In terms of meditations, the notion as used here relates to both the careful, knowledgeable and deep considerations done in these managing practices, but not the least to the issues discussed earlier, of the triumph of metaphysics and thus the role of managing in enabling the transcendence of subject/object duality, as depicted for example in the metaphor of the Klein-bottle. It also carries with it the connotations of planning mentally, of conceptual work, of the idea work so central to the managing actions in the projects investigated. And it also signifies the important notions of levels or orders of reality in this domain.

There are "dangers" here as well, in the "acts of entification" (Larsen 2008), were the objectified sign usurps the object. Were the process of objectification has gone "so far" that qualities can be attached to and detached from "objects", the self included, by strategy and will. Entification seen as a process of making something inchoate into a "thinglike conceptual entity", is a precondition of thing-making and might be considered a premise for managing (see chapter six and nine). We found a resistance to entification in Hydro, even if entification is considered to be a precondition of managing. The managing in Hydro is skeptical to the conceited. Managing practices here should be dealing with the "serious stuff", close to the "core" processes of nature and culture. Launching fancy management slogans, "just words", would bring even the President and CEO down, he himself mused; much like the "heavenly mandate" was revoked from the emperors of China if the people became disgruntled enough.

Nevertheless, in the "Hydro Way", slogans of values and identity were launched, instrumentalizing qualities. However, while some degree of "entification" prevailed, the effort was circumspect in trying to keep the relationship between the signs and their referents, between the "Hydro Way" and lived experiences, as genuine and authentic as possible. While a certain element of strategic entification certainly was present, an anti post-modern insistence on a continget non-arbitrary relationship between the sign and the referent continues. Thus, although the use and dissemination of the "Hydro Way" were different for internal and external audiences, at some levels it was coherent and unified in its mediums and messages.

"Grounded realities" seems ontologically to be the "guiding principle" in the investigated context. However, this grounding is to a large extent to be found in the implicate orders of potentiality from were abstracted/materialized conceptualizations and objectifications emerges. The experiences gained through project work and aluminium production, of creations and destructions, transformations and transductions, build up a repertoire of realizations, tacitly or otherwise, of fundamental reality as undivided, movement and flow. A movement that can be "tapped into" in various ways, and from were cultural creations of great power and potency for wealth creation and societal progress can be abstracted and materialized. This form of grounding is fitting with a quantum reality view of nature outlined in chapter six, and is summarized in the concept of an *ontology of "grounded potentiality"*, which describes the *social reality of construction* in the domain of managing investment projects as processes of bringing forth and realizing potentials in projects and plants as combined abstracted/materializing wholes in new forms of increasing density, robustness and durability.

On this fundamental background we have seen, consistent with the historical legacy of the "managerial revolution", that managing actions in projects have been much concerned with conceptualizing, standardizing and formalizing aspects of reality. The main objective of projects is in a sense the making of the thing (the plant) before the thing is made. At least this applies to the first phases, until Decision Gate three, of

the CVP process. From then on the project is “execution”, i.e. the making of the “real thing”. However, as the foregoing presentation indicates, rather than any dichotomized notion of abstract work being materialized in the plant, a more dynamic model of unfolding abstracting/materializing from the implicate order is advocated. Conceptualizations of early phases are also “thinglike” and imbued with “thinghood”.

As we saw, the western cultural tradition can to a large extent be described in terms of its “things” orientation. The thing-making acts in the early phases of projects are directed at endowing various qualitative and conceptual flows with enough “thinghood” to prepare the ground for the materialized “execution” of the project to produce the finished plant. However, in projects qualities are never attached and detached more or less accidentally, as the circumstances and strategies may conspire, or at some persons will. Natural and cultural “realities” pronounce sentences and convict, and keeps the objectification “in check”, so to speak, within an “unfolding” project logic that defines the “social reality of construction”.

As discussed earlier, standards are ways of measuring and making particular events and things commensurable and comparable. As Larsen has argued: “Processes of modernization are mainly about the development of new “measuring” standards for the commensuration of particulars: writing, monetarization, individualization, codification of customary law, quantification of time and space” (2008: 221). As such the “managing revolution” from the turn of the twentieth century added another level to the modernization process. Following the scientific revolution and the industrial revolution, based in engineering the managing revolution introduced a whole set of new measures and standards that objectified new realms of life and reality in the language of “systematization”, productivity”, “efficiency”, and “organizing”. As literature has shown, managerial rationality soon expanded its “technical” realm and “conquered” the whole organization and ever expanding areas of society, indeed becoming “… the unquestioned pacemaker of the modern social order” (Shenhav 1999: 2). A Taylorist component is in the contemporary fused with neoliberal measures of finance control,

and found in almost all areas of life, from the private sector to New Public Management (NEP) and in civil society.

An illustrative example of NEP is the care of elderly in the social democratic welfare state of Norway. Even the most particular of caring actions have now become institutionally objectified by econometric time management. A patient's everyday life, in the correct contemporary language a "user" of services (not yet a "customer"), is completely and finely grained categorized in terms of allocated "services" s/he might have received by formal administrative resolutions. Here is the time allocated for just an exemplary few of the caring activities done by the caring professionals in an institution for the care of elderly: "… making meals (15 min); shower/washing of hair (30 min); tooth/prosthesis/mouth care (5 min); hearing aid/glasses cleaning (5 min); shaving (5 min): nails/skin (5 min); toilet help (10 min); help with support stockings (5 min)" (Kostopoulos 2007: 69, *my trans.*). Activities are decisively time measured and standardized, making particular activities commensurable in order to enable a financially based management system were the "money follows the patient".

As we have seen, the knowledge-economy has added yet another level to the managerial revolution. In the at least partial switch from a technocratic, engineering-based to an "accountocratic" finance-based managerialism; the "managing of knowledge" in terms of "managing management" has been accompanied by a thorough "financialization of everything". In Hydro we have seen how project and other corporate activities increasingly, conquering more and more areas of corporate professional life, are managed by financial control mechanisms. This demands a preparation of particular qualitative domains by what we might label "financial entification". As a continuation of Weber's notion of the disenchantment of the world, new areas are continuously included where wholes are divided into smaller and manageable units. Incentive systems, key performance indicators, best practices, and so on and so forth.

In the recently somewhat popular trend in organization theory of so-called "positive organizational scholarship" (cf. Bernstein et al. 2003), no part of the inner life

of “professional persons” is to be left untouched by the entification process: “hope”, “belief” and “heritage” are for instance currently being conceptually prepared by acts of entification, sub-divided and economtriced, to become in the end instrumentally manageable. For a constructive critique of this field, highlighting its moral and cultural underpinnings and claims of separating positive from negative emotions, see Fineman (2006). This separation and “managing” argument, including processes of “pitting (good) emotion against (bad) emotion” hearkens back to the philosophical discourse underpinning the emergence and triumph of capitalism itself, as described for example by Hirschman (op. cit.).

The authenticity advantage

In the review of the instrumental efforts of representing and communicating Hydro cultural values, standards and ways of working, in the “Hydro Way” material many of the objectification processes have been identified. However, we have also seen a healthy skepticism both among internal “reputation” and communications managers as well as internal “audiences” towards these measures. While acknowledging “brand” values and thus signs taking up a “life of its own”, Hydro managers insist upon both a distinction and a “rational”, in the sense of correspondingly truthful, relationship between signs and practical experiencing reality; between signifier and signified as well as between signs and its referents. In an economy of signs, Hydro is still advocating *rationalistic sensibility*. In this sense, while Hydro has indeed acquired traits of the financialized “post-modern” phase, for example in its stress on value appreciation (“verdsetting”), they have not “abandonded reality”, to phrase it somewhat pompous. The technocratic tradition is probably too strong to completely give in to enchanted financialization.

I thus conclude after also investigating Hydro’s considerable efforts of explicit language-based signification, of their activities in representing and conveying their “meaning”, what they stand for, through statements of values, mission and talents in various corporate communication materials, that practices and idioms of representation

are to a somewhat surprising degree in coherence. An insistence upon a continuing connection between signs and their referents prevail. Although standing by no means in a one-to-one relationship I thus find that managing in projects to a large extent *instantiate in practice the value integration* sought expressed formally through various means of communication. In combination with observational data and member's descriptions of Hydro "corporate culture" as characterized by a rational and sober, quiet-going but confident and powerful seriousness, the study concludes that this exemplify a *culture of authenticity* that in many respects is at odds with the post-modern "signs of the times" at the millennial moment. In the instrumental language of the majority of business management literature we might propose this as an *authenticity advantage*.

Thus in the contemporary so far latest phase of modernity we have found not only increasingly disenchantment, but also in one sense a reenchantment of modernity, a reenchantment Hydro managers and economic practices only very partially seem to feel at home with. In financialization the entification processes of transforming immaterial economic realities into material "thingness" have not only collapsed or naturalized the distinction between the sign and the object, but has simultaneously set almost completely free the reified immateriality of value from any productive reality. This seems to be at odds with the *"ontology of grounded potentiality"* in Hydro, despite the fact that Hydro successfully has been riding the recent years "wave of financialization". The decoupling in the economy occurs at least in its creational logic while, as we have seen, it is intimately linked in its effects of producing assymetrical relations of economic inequality. The incredible innovations in the finance industry has thematized, reified and "solidified" abstract conceptualizations of money and value into commensurable and transactional objects of the real economy. The level of abstraction of these objects, from derivatives to what economist Paul Krugman has

called "the alphabet soup of C.D.O.'s and S.I.V.'s, R.M.B.S. and A.B.C.P.",[199] is so high and complexly interrelated that hardly anybody, even in the main acting agencies, understands their dynamics.

Nevertheless, as we have shown, these "thingified" abstractions do material work. They have profound effects of producing inequality and asymmetrical economic relations in "real life". The replacement of economic reality with its imitations and even by the simulacrum of financialization, to use post-modern language, produced an ethos or euphoria of enchanted beliefs at the millennium moment. The euphoria, now arguably cooling down, is consistent with the historically recurring pattern of financially induced economic crisis in capitalism. At the height of potential crisis, before the breakdown, a spirit conducive of a "wonderful moment" has been found at the capitalist centers (cf. Arrighi 1994; Braudel 1984; Appendix II).

Managing, reasons and rationalizations

Some main points that can be drawn from the above exposition in terms of discourses on value spheres, modernity and rationality will be briefly summarized in the following. It seems like Habermas' perspective can be criticized in the exact same manner in which he criticized Weber. It can be argued that it is not the *capitalist* realization of modernity "per se", which has determined a route to loss of meaning, anomie and psychopathology. This image is but a mirror of the mainstream "standard canon's" representation of economic history and theory as a "dismal science" with a general outlook of pessimism and of animal-like economic man. This can be contrasted with the alternative trajectory of economic history, as portrayed in the optimistic outlook of the "other canon" in its tenet of the spiritually inspired producing man with "Schöpfungslust" and "Schöpfungskraft" (the power, pain, desire and joy of creation), and the "never ending frontier of knowledge". This alternative cannot simply be

[199] "Innovating our way to financial crisis", The New York Times, December 3, 2007. The text can be accessed at "CommonDreams", here: http://www.commondreams.org/archive/2007/12/03/5569/ (04.12.07).

discarded with the wave of a post-modern hand derogatory describing it as the "modern myth of progress" (cf. von Wright 1994). Thus, a homogeneous view of the instrumental economic rationality "system" needs to be differentiated. In the first instance at least into the two idealized "canons". The Habermasian critique of Weber, that the latter is guilty of projecting an inevitability (an alternativelessness) into the historical trajectory he investigates,[200] can thus also be applied to Habermas himself. He can be said to project inevitability into the capitalist trajectory he is investigating, while in the factual economic history and the history of economic thought and policy, although idealized two major and competing traditions have always been present.

The second major trajectory has at its core the potential of a vastly different route for society and humankind than that which has been most extensively realized as hegemonic in the contemporary. In the other canon, as exemplified by Hydro projects and managing, the value spheres are indeed integrated in diverse ways, discourses on morality are a premise for economic activities, both rhetorically and practically. The full horizon of possibility is thus not taken into account when the historical analysis is based upon the rationalization of a capitalist society, the latter conceptualized as a version more or less reified as the "standard canon". As for Weber with the differentiation of the value spheres in general, for Habermas it is Capitalism, the impersonal market forces accentuated by the profit motive, the alienating machine forces and exploitation of labor that characterizes the path taken by modernity. This is seens as a path which by historical necessity has lead to the colonization of the life world, with its implications of loss of meaning in terms of cultural reproduction, anomie in terms of social integration, and psychopathology in terms of individual identity formation.[201]

In Hydro the "profit motive" is constituted in line with an MCM' logic (and not by MM'), but is furthermore incorporating wider moral and societal concerns. Profit is taken as a means to and end rather than as an end. I repeat some of the quotes from the

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[200] See Vetlesen (2006).
[201] See Vetlesen (2006).

culturally self-reflexive "brand process" which illustrates this quite well (see chapter nine):

> "For better, for worse, we've used profit in ways that let us contribute more over time—not just to customers and shareholders, but to people generally." —*O&E Employee*
>
> "Our structure is complicated because we wanted to ensure that there was interesting industrial activity for our people. Our evolution is not driven solely in pursuit of profit." —*Corporate Executive*
>
> "We have a hard time arguing for profitability alone, as though that's all that counts. Our history looks at money as a way to ensure self-sufficiency for others as well as ourselves." —*Agri Employee*
>
> "I think on a certain level people do not comprehend this constant drive for more profitability. We think to ourselves, well, we have enough profits to serve our purpose." —*Aluminium Employee*

Seen in such a light, also in perspective of the wider empirical descriptions above and bearing in mind different attitudes towards the profit motive, Hydro is a somewhat illustrative exemplar of what has been described as the capitalist spirit of the Renaissance: "… the profit motive and the so-called 'middle-class virtues', acquisitiveness and industry, frugality and respectability" (Hauser 1999: 20).

My argument in the discussion here, is that the tradition of the "other canon" provides an alterative capitalist historical route which demonstrates the limits of the colonization thesis. It provides a basis for an argument that it was neither the rationalization of society per se (the differentiation of the value spheres), as was Weber's argument, nor the selectivity dictated by the historical trajectory of capitalism per se, as Habermas argues, but rather the hegemony of the "standard canon"; the barter, trade, exchange, finance and consumer tradition of capitalism, that might be accountable to the colonization thesis. It is not the profit motive or the machinization of society per se, but the specific culturally contingent capitalist ethic(s), or lack thereof, that guide the emergence of these phenomena, and dress them up in a particular clothing that should be the focus of analysis. Shenhav (op. cit.) argues for example,

questionably, that managing has emerged homogeneously as totally separated from morality and the sphere of politics. The Norwegian tradition and Hydro examples shows such generalizations to be historical reifications.

More credibility is to be found in Schumpeter's (1943) view that imperialism is not a *necessary* feature of capitalism. I agree fundamentally, as it were, with Habermas' description of modernity as an inconclusive, unfinished, project. A capitalist trajectory based upon the "other canon" provides an alternative, a powerful force of resistance, coming form within the capitalist economic system itself, arguably directed at least to some degree against the colonizing powers of the "standard system". As have been illustrated throughout the thesis, Hydro exemplifies tendencies of capitalist rationalization of both the "standard" and the "other canon" type, but fundamentally, I argue, their social organization and cultural legacy as instituted in their "social reality of construction" and particular type of managing practices and economic activities underpinned by specific values, show their profound belonging and embeddedness to the "other canon".

This outline may immediately raise some objections. If indeed, neoliberalized fiancialization is a triumph of the last quarter of the century, how can it possibly be accountable for the trajectory produced by capitalism? One answer is to reject the core tenets of both Weber and Habermas concerning the differentiation of the value spheres, and the subsequent domination of the instrumental system. Another possible solution is to argue that seen through the lense of the "other canon" the differentiation of the value spheres would not necessarily led to disassociation of the "big three", but to a possibility of a differentiation accompanied by integration. This is to say, again, that it is the dominance of the "standard canon" that has increasingly led to the disassociation with the subsequent colonization trajectory, a path that has realized its full "potential" during the last quarter of the century or so.

Mixed regimes of rationality

In such a perspective the main faculties of rationality, as outlined in Aristoteles concepts of Theoria (Sophia), Praxis (Phronesis) and Poiesis (Tekhne), and since then discussed and changed both in content, relationships, rank and position, can provide interesting input. I have argued that in one sense the practices of industrial investment project managing in Hydro, and by empirical generalization, Hydro corporate cultural practices, are instantiations of modernity at its "height", as it were. On the other hand, to paraphrase Latour's popular and quote-friendly title, the same practices and relations that constitute them "have never been modern" (1993). I have shown that in certain respects the Hydro case also illuminates a strong historical continuity of western cultural thought and practice, in reaching back to antiquity notions of, most importantly, Poiesis (tekhne).

Moreover, in the midst of Hydro's "most modern" of practices, exemplified not the least through its research-based industrial project managing practices, that is, its scientific, industrial and managerial revolutions legacies alliance between theory and skills-based, metaphysical and physical production; a space for both Praxis and Theoria was found, and arguably also as manifestations of the realm of a form of modern "sacredness". In the practices of managing investment projects, arguably defined as capitalist "oikos"-activities *par excellence*; of the core, as it were, of instrumental, economic object rationality, pockets of activities of goal-*finding,* of collective and communicative interactive wit and will formation, and "self-legislation" were discovered. These aspects bear stronger affinity with the moral value domain of modernity, and also with the Praxis and Theoria domain of antiquity (cf. Øfsti 1999). In their various emphasizing on creational aspects of their work, strong legitimation is also found in the aesthetic-expressive value domain, to use Habermas' conceptualization.

In the Hydro case we found empirical illustrations of both diasynchronous continuity and dramatic changes in the reconfigurations of rationality and validity claims to knowledge. Thus, in the midst of practices of capitalist, industrial and profane production, ostensibly clear and unambiguous instantiations of Habermas' cognitive-

instrumental value domain, we find alternative spaces bringing forth other types of rationality and validity claims.

On a further remove, in the rationality shift accompanying the turn to finance, a turn I argue underpins the legitimation of managing at the millennium moment, bares important significance on the debate on contemporary modernity. In the foregoing it has been argued that from its technocratic engineering foundations managing has through neoliberalization turned its justification to a large extent becoming based in economics, finance and accounting. We have seen managing as another, crucial and dominating discourse in the globalization of modernity; adding to the medium machinery of the western produced abstract package of cross-cultural intercommunicational infrastructure (that makes worldviews comparable and commensurable); abstract autonomous individuals, abstract time and work, abstract value and abstract space. Managing has created and disseminated a new nomenclatural layer of "standardization", "systematization", classification, productivity, efficiency, etc., fueling modernity. However, as we have seen, these processes have been far from monological and all-embracing. Hydro in some respects instantiates alternatives and to some extent subversive and counter-constructive managing trajectories.

The neoliberalized (partial) shift in managing legitimation from engineering to economy, finance and accounting has brought about changes in both managing practices and ideology. We have witnessed a shift of emphasis in the managing elites, indicating an underlying turn from technocratic to "accountocratic" rationality. The accountocratic rationality of neoliberalized modernity is an aspect or phase characterized by "financialization", by an economy of signs, of "virtualism", and "hyperreality". An economy turning "virtual paper" into gold and/or shit. Gold for the few, and shit for the many. This is what I have chosen to describe as a reenchantment of modernity. A reenchatment, that is, distributing values upwards in the system.

In the midst of the cognitive-instrumental machinery, which according to Weber and Habermas, and others, is colonizing the life-world, it has been discovered validity claims based in both in the morality and the aesthetic-expressive value domain, in sum

comprising what I call “mixed regimes of rationality” (see chapter one, five and six). Here, morality, aesthetics, the good and the beautiful, notions with affinity to the Theoria, Praxis (phronesis), and Poiesis conceptualizations of antiquity are also enacted in practice. In some senses radically changed, but nevertheless carrying with it continuity.

When Hydro symbolically in their promotion film installs their industrial creations at a modern art museum, it is not identical to Duchamp’s exhibition of toilets in the museum. The supposedly fundamental separation between production (art) and aesthetic art that came into being with modernity, is easily recognized in Duchamps work. The toilet as a modern art installation highlights with a contrast (”what is the toilet doing in a museum?”) both the differentiation of the rationality domains, as well as reproduces the autonomous sphere of modern art (while simulating to tear it down). Hydro idioms in this respect is not either “fully” modern art nor fully “mundane modern” production. The aluminium products hanging in the museum are not analogically “toilets”, neither in “the museum” sense nor as imagined in “ordinary use”.

One interpretation of the “mixed regimes of rationality” would be that the life-world is also colonizing the instrumental domain (cf. Sørhaug 1996). However, I argue that the mixed regimes, as they are enacted and reproduced in communicative interaction in our context, co-creates and co-originates their own entangled reality which cannot be reduced to three (or any other number) of components challenging, colonizing or contaminating each other. The mixed regimes display, under particular circumstances, a differential set of complex, wholistic and undivided reality manifestations.

The exact nature of these manifestations are difficult, if not impossible, to pinpoint into a “punch line” (cf. Bate 1997). Such an attempt would inescapably lead to reifications and essentializations. In this light we might acknowledge that mysteries are still left to be discovered, or left alone, or being ungraspable, in the “midst of modernity”. As the anecdotal, narrative empirical descriptions testify, these wholistically (monoplural) mixed regimes of rationality indicate, they culturally signify,

a deeper level of nature, a nature of fundamental non-duality, entanglement and undividedness described formally from the point of view of nature by the new physics. As such, the thesis argues for a radical naturalism, for the incorporation in our cultural models the deep insight of the fundamental connectedness and unity of mind, body and nature (see below).

The medium-range view: Levels in capitalism(s)

In Schumpeter's analysis of the decline of capitalism he stresses the important factor of the change in the bourgeois kind of profit motive – the family as one important means for the capitalist engine of production. The family oriented profit motive of the bourgeois values kept up the long-term view, as benefits were perceived to be harvested by the lineage and not for immediate consumption. In fact, he notes that the:

> "… capitalist order entrusts the long-run interests of society to the upper strata of the bourgeoisie. They are really entrusted to the family motive operative in those strata. The bourgeoisie worked primarily in order to invest, and it was not so much a standard of consumption as a standard of accumulation that the bourgeoisie struggled for and tried to defend against governments that took the short-run view" (1943: 160).

Possibly realizing the potentially controversial aspect of this argument, he adds a footnote outlying the following: ""It has been said that in economic matters "the state can take the longer view." But excepting certain matters outside of party politics such as conservation of natural resources, it hardly ever does" (ibid.: 161). Schumpeter's argument is that with the decline of the family motive the time-horizon of the businessman shrinks – roughly to his life expectation

In a research interview Reiten promoted the position that he and Hydro indeed are taking societies long view, while politics too frequently is concerned with narrow interests. As a custodian of a century's old continuous wealth generating corporation, his words cannot in the remotest sense be dismissed off hand. Not the least since he also knows top-level politics as an insider. In relation to specific investment projects, the time horizon is considerably shorter than the timeframe imagined by Schumpeter's

family motive driven capitalist society of bourgeoisie entrepreneurs. However, as I have shown, in this scheme projects represents the reproduction of capitalist relations on all levels, from project, to corporation to "system".

And of particular importance is the Hydro view that it represents societ(ies) long-term view. And this might be seen as a specific version of capitalist society, at odds with the financialized economy and consumer culture. Also, if we take into account the substantial difference in the overall conception of time in the contemporary globalized economic order of the transport and ICT enabled interconnected "time-compressed" planet, real-time market transactions and public media galore, there might be even more truth in the Hydro CEO's contention. Considering Hydro's 100-year history as Norway's leading industrial company, and belatedly emerging as an important "global" actor, it is a highly unusual long-term resilience in the world of corporate life cycles, and the assertion seems to have even more legitimacy.

A cross-cultural review of "pre-capitalist" notions of "money and the morality of exchange" found that: "… the vast majority of cultures make some space for exchanges which display many of the features which are sometimes, as in our own society, associated with monetary exchange" (Bloch and Parry 1989: 29). Nevertheless, a recurring cross-cultural pattern of two related but separate "transactional orders" emerged, comprising: "… on the one hand transactions concerned with the reproduction of the long-term social or cosmic order; on the other, a 'sphere', of short-term transactions concerned with the arena of individual competition" (ibid.: 24).

Although arguably interdependent, the first is typically linked with morality and the second with political economy. The articulation of the two spheres show that they need to be both separate and related, and thus transformative processes of conversions between them becomes imperative. Conversions from the short-term individualistic cycle to enable the reproduction of the long-term cycle is morally evaluated in positive terms, while the opposite, when acquisitive individuals divert resources from the long-term cycle for their own short-term interests, is morally sanctioned negatively and in stronger terms.

Bloch and Parry speculates that the ideology of capitalism reflects something completely different than the logic of the two transactional orders, or possibly that the values of the short-term order have expanded to the long-term cycle. Indeed, echoing neo-classical economics thinking and ideas traced back to Adam Smith and the wider philosophical debate about passions and interests, capitalism in this view has possibly developed into an all encompassing order and theory "… in which it is only unalloyed private vice that can sustain the public benefit" (ibid.: 29).

Thus again, we see the dominance of the "standard canon" in assessing capitalist economic activities, and the image of man and social relations constituted within it. Taking both the recurring and consistent pattern of the two transactional orders of pre-capitalist societies and the "other canon" capitalist tradition into consideration, the heated and morally charged public discourse surrounding for instance the Hydro managers stock options compensation schemes, might be better explained. In diverting a small portion of value from the company, seen as a vehicle for societal reproduction, into their own individual pockets, its seems like the political and public reaction to a large extent interpreted the options schemes as converting value from the long-term cycle to the short-term. Indeed, the prime minister of Norway described President Reiten as a "representative" ["tillitsmann"] of society. In this picture, we might possibly conclude that Hydro incarnates more accurately modern society's "medium-range view".

Corporations like Hydro and their managers are both hailed and demonized. And seen as positioned somewhere between the short and the long-term orders, their ambivalent moral status can arguably be interpreted. Just like the contradictory representations of money universally, as both "… devilish acid or as instrument and guarantor of liberty" (ibid.: 30), can be explained from the two different perspectives of the transactional orders, so can arguably Hydro and their manager's ambiguous public positioning. Perceived as an agency for an acquisitive short-term grasping for the "love of gain", or the "love of lucre", strong moral themes in capitalism's inception (cf. Hirschman 1977); of "avarice", the latter a term frequently used to characterize Hydro

managers in the stock options debate, Hydro represents the devilish nearsightedness. Perceived as custodians for society's long-term welfare and development, Hydro represents a saving power of moral valor and respect. Indeed, in light of the perspective of differential ontologies and implicate orders advocated in the present thesis, we might also discard the notions of *two* transactions orders, and rather imagine a landscape of multiple levels or orders of capitalism(s).

As Hirschman has shown, the long and complex moral philosophical discourse of the "passions and the interests" culminated in the view referred to above, that the private vices related to the "love of lucre" and the acquisitive instinct involved in commercial activities, as long as it defeated other and more deadly sins of human nature, could be transformed into collective virtues to the benefit of society as a whole. As the continuous morally heated debates about capitalism show, likewise the differentially qualified trajectories of "capitalisms" in the plural for example through Hydro and the "other canon", the homogeneous view of capitalism including its moral underpinnings in its view of human nature as economic man created in the image of the "standard canon", is at the most only one part of the greater story about capitalist social formations and must be considered as historical reifications.

Furthermore, that finance capital in the contemporary should embody the long-term view, at least under neoliberalism, is a highly questionable tenet. It seems very difficult to align the present financialized system of "accumulation by redistributive dispossession" with a long-term view for the common good. For Schumpeter a critical sign towards a change into a more short-term time horizon is when the capitalist "… drifts into an anti-saving frame of mind and accepts with an increasing readiness anti-saving theories that are indicative of a short-run philosophy" (op. cit.). As discussed above, the age of neoliberalization is brimming with anti-saving theories, philosophies and frames of mind. The whole neoliberal, financialized global economic system can be described as a debt economy, if not indeed a gigantic Ponzi scheme, a pyramide-game, of "borrowing virtual money into existence" in new and innovative ways. Thus in direct opposition to a saving view.

How has Hydro acted in this respect? Varying to some extent during their history, Hydro as always been a financially solid company. They have never ventured upon hugely debt-financed ad-ventures. And that in the face of often considerable scorn from investors and other opinion makers characterizing Hydro as a conservative, overly careful and boring company. Hydro seems thus, when it comes to its own financial situation and despite their other "enchanted adjustments" in the name of "shareholder value" and "value based management", to have bought relatively little into the "casino capitalism" of the last quarter of a century. When the Norwegian state, as outlined earlier is managing one of the world's largest investment funds, has become a financial speculative state of quite some proportions, by 2007 holding values of approximately 2 trillion NOK (2000 billion NOK),[202] Hydro has still circumspectly continued to invest in industrially productive projects, at home and abroad.

In a neoliberalized age of short-term profits, financially driven "casino capitalism", self-interested nearsightedness and speculation as the spirit of the age, from the capital market state through to the "gambling individual" (cf. Comaroff and Comaroff 2000), the Hydro projects and corporate strategy of productive investments can be reframed and reassessed rather as bold, risky and even heroic. It can be seen as an Appollonian force standing up against attacks from nearly every possible direction, left and right, state policies, cultural perceptions and moral sentiments. We might say that the image of individualistic utilitarianism is alien in a context of capitalist ethic that enjoys working for the future more or less irrespective of the possibility of harvesting the crops "instantly". While seen as positioned somewhere in the "medium-range view", in their boldness and "riskiness", we thus also find a Dionysian element. In all of its modern rationality, it is nevertheless still a kind of life-inspiring madness to it.

[202] See Norges Bank pension fund reports (http://www.norges-bank.no/Pages/Report____65164.aspx).

Towards a radical naturalism: Reinventing anthropology

The outcome of the discovering journey has brought forth several sets of results. We have found that our subject matter at all of its constitutive levels are embedded in constraints of profound social and existential implications. Whether questioning capitalism, corporations, management, engineering, economy and finance, knowledge, production, technology and industrialization; through the focus on managing in international investment projects, in each instance as well as in their co-origination, it has been unfolded complex processes and powers of creation and destruction, "good and evil", emergence and decay, of revealing and concealing, of danger and saving, and most fundamentally the question of being. The discussion has led to discussions about the reconceptualizations of the co-origination of "nature and culture".

New faces of managing, globalization and economy has been explored. I found a globalized knowledge society, yes, but it was conjured by financialization in the most penetrating and consequential way. I found alternative and subversive trajectories of managing and capitalism itself, yes, but "the driving forces" seems presently to be overwhelming. In a movement between ideas, signs, symbols, and meanings, to materiality and objects, from imagination and reflection to rhetoric and realizations, the journey nevertheless comes to a close on a note of elevation. In the midst of the herein investigated base of modern, economic production realities, in a small part of its differentiated, fragmented, and yet globally reaching interconnected constituents; in the cauldron of contemporary capitalism, as it were, one is struck by how this subject matter also indicates a deeper level of integration and entanglement in the whole of nature.

The main problem with the internalization, socialization, and institutionalization dynamics of social constructivism might be said to be its lack of a proper conceptualization of "orders of recursivity" (Bateson 1979), and thus differential modes of causality and ontology (cf. Johansen 1990, 2008); and its point of departure as social rather than natural. In social constructivism limits of reality are set by nature, but the

social reality is both produced by and producing man (cf. Berger and Luckmann 1966: 204-211).

The approach advocated here seeks to contribute to the notion that the fundamental distinction of man, mind and nature is a delusion of reality's deeper levels. I adopt the Paglian conception opening her magisterial work "Sexual Personae (1990): "In the beginning was nature". Man is nature first. Nature is the background from which all else is abstracted/materialized, id-entified, objectified, re-assembled and reproduced. The notion that "Man is nature", is an expression the new physics/metaphysics of "quantum reality" may also inspire. That a human being is a "part of the whole", as Einstein put it, and that this awareness may free ourselves of the "optical illusion" of our present conception of self as a "… part limited in space and time" (Nadeau and Kafatos 1999: 211).

In this respect social constructivism, in its view of nature as setting "the limits", misses for example the shift in perspective from part to whole. On the other hand, the ecological worldview or social paradigm, of for example Fritjof Capra (1996), is according to Nadeau and Kafatos: "… entirely consistent with the understanding of physical reality revealed in modern physics" (op. cit.: 213) in terms of five related shifts of emphasis, of which only two I refer to here: First, the shift from part to the whole. That is, the properties of the parts must be understood as dynamics of the whole; and secondly the shift from structure to process. The latter reflects the notion that structure is the manifestation of an underlying process and that the entire web of relationships is fundamentally dynamic.

I thus argue, but along quite another train of thought than advocated by for example Barth (1992), for shift towards a *radical* naturalism in the analysis of the social and cultural. A naturalism that may possibly investigate, describe and account for the subtlest forms of communicative interactions and creative constructions. A naturalism were not only the para-ethnographic has its place both as method of investigation and as a form of writing, but were the para-psychological meets modern advances in physics/metaphysics to account for the fundamental undividedness of the universe, of

the basic entanglement of nature, and of relationality as the deepest characteristic of the socio-natural fabric. When the frontiers of physics seems to be telling us that *everything in the universe is already connected*, what seems to be in need of explanation is not so much wholism, coherence, and union, but rather unfolding, objectification, and fragmentation. Thus some of the classical questions of social science related to alienation, anomie, disassocation and psychopatology are still made relevant, but from another point of departure. Likewise might propositions for alternative paths and possible remedies be asked in new ways from a new starting point.

Anthropology is well positioned to pick up the story and investigate new questions of man in the modern world. Anthropology with its primary concern with relations can in a renewed dialog with the new natural sciences be reaffirmed or re-grounded on a deeper and naturalistically based ontological level. In such a perspective we might ask questions about relations seen not *primarily* as socially constructed, but seen as a key feature of the nature of the entire universe. The emerging new worldview sees the whole of nature on the most fundamental levels as a seamless unitary whole, with man's mind and body and cultural creations, metaphorically like a Klein-bottle, unambiguously embedded although "implicately enfolded" within the whole panorama of the interconnected natural universe.

That however, is not the end of the story. It can just as well be seen as where the story begins anew. The above prospect opens up not only for new questions and a renewed and reformed dialogue between the sciences, a "third culture", but also for a reinvention of anthropology and the role of our discipline as an arena for a *new unity of science*. In the crisis of the discipline instigated by the "loss of the local" and the "extinction" of the "pre-modern primitive" anthropology not only lost fascinating subjects and objects of study, but it instigated a self-suggestive melancholy of a loss of itself. However, new "worlds" are continuously created and the crisis might enable us to better seem them. If so, the spectacle that is nature, cultural creation and diversity in all of its myriad manifestations might be rediscovered anew.

Appendices

Appendix I: The Two Canons Contrasted[203]

	"The Other Canon" The knowledge- and production-based tradition	"The Standard Canon" The exchange-based tradition
AREA OF ORIGIN: NATIONS	NATIONS CATCHING UP	DECAYING, MATURE AND / OR UNDEVELOPED
	PROGRESSIVE LAND-POWER	SEA-POWER / REGRESSIVE LAND-POWER
	CONTINENTAL	INSULAR / LANDED BACK-WATERS
SOCIAL ORIGIN:	NATION-STATE MONARCHY STATE / INDUSTRY PRODUCTIVE CAPITALISTS	FEUDALISM ARISTOCRACY MERCHANT-/ LANDED CLASS EXTRACTIVE CAPITALISTS
INCLINATION:	PRO-STATE (important)	ANTI-STATE (played down)
TYPE:	NATIONAL ECONOMICS INDUSTRIAL CAPITALISM	COSMOPOLITAN ECONOMICS FINANCIAL CAPITALISM
IMAGE OF MAN: (and of state)	HOMO FABER /- LUDENS GOD-LIKE (potential) rational (self)active creative (producing) compassionate	HOMO ECONOMICUS ANIMAL-LIKE irrational / superficially rational (acting according to next point below) re-active (instincts, hunger, sex) non-creative (consuming) non-compassionate
ROLE OF MAN:	PRODUCER	CONSUMER

[203] Reproduced from "The Other Canon: The History of Renaissance Economics. Its Role as an Immaterial and Production-based Canon in the History of Economic Thought and in the History of Economic Policy", draft version by Erik S. Reinert and Arno M. Daastøl to be found at http://www.othercanon.org/papers/index.html. A final version of this paper, with a modified table is published in Reinert (2004), and a similar table is also found in Reinert (2007).

CORE OF MAN:	SPIRITUAL SOUL	ANIMAL & MACHINE-LIKE
MORAL OBLIGATION:	SPIRITUAL	BIOLOGICAL
DUTY: of the individual:	IMITATE GOD perfect oneself and your fellow citizens	SURVIVE pursue one's own interests follow your instincts and feelings
of the state: of the civil servant:	"welfare state" make state work well for the public interest	laissez faire make state work for a minimum interest
IMAGE OF WELFARE STATE:	COLLECTIVELY ALLOCATIVE	INDIVIDUALLY ALLOCATIVE (OR COLLECTIVELY DISTRIBUTIVE: FABIANISM)
SOURCE OF WEALTH:	IMMATERIAL creativity / learning (dynamic accumulation) morality culture knowledge	MATERIAL accumulation (static accumulation) trade, war ,looting nature land labor (quantitative) capital
ORIGIN OF RENT: (surplus)	COMPETENCE CREATION OF VALUE	WEALTH: NATURE, CAPITAL FLUCTUATIONS IN VALUE
PROPELLING POWER:	INNOVATION-DRIVEN	WEALTH-DRIVEN
MOST PRODUCTIVE CLASS:	SCIENTISTS ENTREPRENEURS ARTISTS INTELLECTUALS	LAND-OWNERS (The Physiocrats) MERCHANTS (Municip. mercantilism) PHYSICAL WORK
ECONOMIC FOCUS:	PRODUCTION / KNOWLEDGE	BARTER / AGRICULTURE (classical school, physiocrats)
MARKET FOCUS:	MONETARY MARKET GOODS MARKET ADMINISTRATION GIFT EXCHANGE REDISTRIBUTION	MONETARY MARKET
EMERGENCE OF MARKETS:	ASSISTED standards legal framework patents infrastructure education	SPONTANEOUS = SELF-ORGANISING

VALUE FOCUS:	VALUE IN USE moral and physical magnitudes	EXCHANGE VALUE monetary magnitudes
EMPHASIS ON:	"REALÖKONOMI" (production)	FINANCE ECONOMICS
ECONOMIC FOCUS:	PRODUCTION SUPPLY TECHNOLOGY	CONSUMPTION DEMAND MARKETING
COMPARATIVE ADVANTAGE FOCUS:		
	COMPETENCE dynamic learning	NATURE static (given: stick to what you already master)
GENERAL OUTLOOK:	OPTIMISTIC ("Never ending frontier of knowledge")	PESSIMISTIC ("The Dismal Science")
GOAL: emerging from:	HAPPINESS freedom of the mind freedom to and from	HAPPINESS freedom of the flesh freedom to
SOCIETAL GOAL:	GROWTH OF CIVILISATION general morality and welfare	MATERIAL GROWTH individual material wealth
ECONOMIC POLICY:	SELECTIVE / DIFFERENTIATING	GENERALISING
LEVEL OF ABSTRACTION:	MEDIUM	HIGH
VIEW OF ECONOMIC ACTIVITIES:	DIVERSITY (producing inequality)	REPRESENTATIVE FIRM (actors all "alike", produce equality in theory)
NATURE OF ECONOMIC GROWTH:	FUNDAMENTALLY UNEVEN NON-EQUILIBRIUM PROCESS	FACTOR-PRICE EQUALISATION
ECONOMIC GOAL:	GENERAL BALANCED GROWTH (all branches in national synergy: agriculture, industry, service, state)	UNSPECIFIED GROWTH IN GENERAL (national specialisation from international division of labor)
ECONOMIC MEANS:	PRODUCTIVITY GROWTH research invest	CUTTING COSTS ("downsizing") buy cheap and sell dear balanced budget
GENERAL STRATEGY:	OFFENSIVE visible hand	DEFENSIVE invisible hand

ECONOMIC POLICY INSTRUMENTS:	HIGH PRODUCTIVITY giving high wages & low unemployment	LOW COSTS low wages giving low inflation and low demand
CENTRAL BANK:	national bank (politically regulated)	"independent" bank 1) free banking (private market) 2) central banking
CREDIT POLICY: IN PRODUCTION: IN FINANCIAL MARKET:	SELECTIVE expansion regulated	GENERAL contraction (fear of inflation) expansion (free)
TAXATION POLICY:	TAX UN/LOW PRODUCTIVE CAPITAL AND CONSUMPTION	TAX CONSUMPTION, POLL-TAX
SUBSIDY-POLICY:	LEARNING, HIGH-TECH FUTURE PRODUCTIVITY (INFANT INDUSTRIES) + SOCIAL PURPOSES (GRANDFATHER-/SUNSET INDUSTRIES)	UNCLEAR
STATUS OF PROPERTY:	CARETAKER the individual as caretaker for the public interest	SOVEREIGN the individual as sovereign ruler
GENERAL ECONOMIC POLICY:	INTERVENTION regulation state initiatives	NON-INTERVENTION deregulation private investments
RENT-SEEKING:	REGULATION of rent seeking in order to create general (industrial) rent for (re)distribution	PREVENTION of rent seeking
NATIONAL GOVERNANCE:	CENTRAL strong state	DECENTRALISED minimal state
INTERNATIONAL GOVERNANCE:	INTER-NATIONAL bi-/ multi-lateral agreements	OVER-NATIONAL (Quesnay, Say, Bentham) "world government" for free-trade
CUSTOMS POLICY:	SELECTIVE REGULATED while catching up	GENERAL FREE TRADE
DEVELOPMENT AID:	TRANSFER OF COMPETENCE REDISTRIBUTE PRODUCTIVE POWER	TRADE, LOANS AND DEBT REDISTRIBUTE MONEY (if anything)
ECONOMIC POLICY:	REGULATION (public) through National Bank	DEREGULATION (private) through independent banking

	bureaucracy	(private or central)
	legal system, concerning	
	credit	
	investments	
	contract conditions	
INITIATOR OF INVESTMENTS:		
	PRIVATE	PRIVATE
	STATE	
	in public goods like:	
	soft infrastructure like:	
	education	
‘	“culture”	
	research and new technology	
	hard infrastructure like:	
	transportation of	
	ideas	
	raw materials (incl.. energy, water)	
	finished goods	
	waste	
ECONOMIC TRADITIONS:		
	Religious scholasticism	Feudalism
	National (state) Mercantilism	Commercial (municipal) Mercantilism
	French Colbertism	
	German Cameralism	
	Anti.-Physiocracy	Physiocracy
	National System	Cosmopolitan System
	American System	British System
	US. Civil War: North	US. Civil War: South
	German Ethical-Historical School	Liberalism
	American Institutionalism	Classical / Orthodox School
		Marginalism
		Neo-classical School
		Monetarism
PHILOSOPHICAL PLATFORM:		
ONTOLOGY:	IDEALISTIC	MATERIALISTIC
EPISTEMOLOGY:	RATIONALISTIC	EMPIRISTIC
(source of human knowledge in general)		
	mind	sensualistic
METHODOLOGY:	(WIDE) EMPIRICIST	RATIONALIST
(source of scientist’s knowledge on economics)		
	NON-FORMALIST	FORMALIST
	qualitative and quantitative	quantitative
	SYNTHETICAL	ANALYTICAL (abstracting)
LEVEL OF ABSTRACTION:	MEDIUM	HIGH

TAXONOMY: (Classification, status of Universals; general concepts)	REALISTIC	NOMINALISTIC
STATUS OF THEORY:	REALISTIC	INSTRUMENTALISTIC
PHILOSOPHICAL TRADITION:	HOLISTIC/ NEO-PLATONIC	ATOMISTIC / ARISTOTELIAN
MORAL TRADITION:	DEONTOLOGICAL (rules)	UTILITARIAN (ends) (also rule-utilitarianism)
RELIGION:	MONISTIC	HEDONISTIC

Appendix II: "Systemic cycles of accumulation" and techno-economic paradigms

In the figure below is an outline of Arrighi's four "Systemic Cycles of Accumulation" (1994); each constituted by a MC phase of material expansion and a CM' phase of financial expansion. Each cycle is named after the capitalist hegemon dominating the specific cycle:

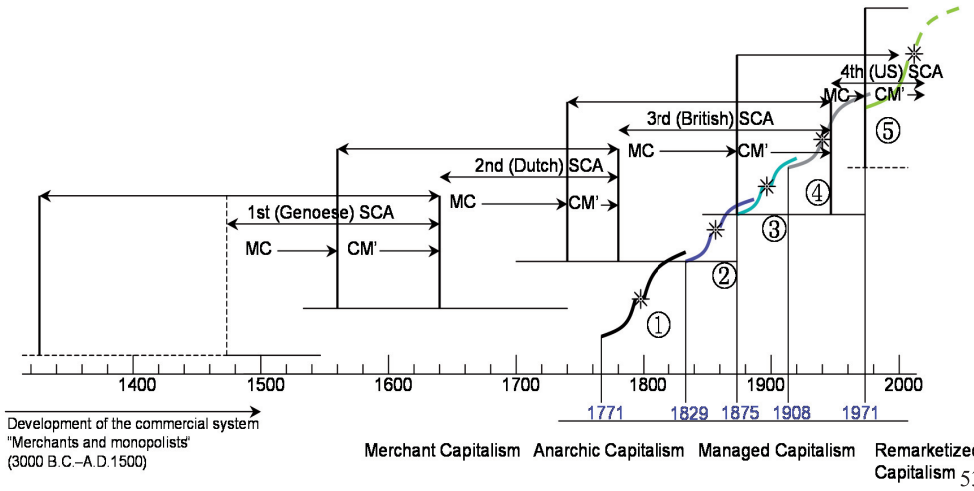
1. The Genoese SCA: The genesis of "high finance" and the constitution of capitalist accumulation
2. The Dutch SCA: The rise of the inter-state system and capitalism as world system
3. The British SCA: Free-trade imperialism
4. The US SCA: The free enterprise system

Included are also the "generally accepted" Schumpeter-Freeman-Perez five successive waves of "techno-economic paradigms", a shift occuring every 40 to 60 years, named after the key technologies underpinning the new wave:

① The Industrial Revolution (Britain)
② The Age of Steam and Railways (Britain)
③ The Age of Steel, Electricity and Heavy Engineering (USA, Germany, Britain)
④ The Age of Oil, Automobiles and Mass Production (USA)
⑤ The Age of Information and Telecommunications (USA)

✳ Indicates the major turning point of the techno-economic paradigm: from a "finance capital" led installation phase, through a crisis, to a "production capital" led deployment phase.

At the millennium moment we find the concurrence of crisis; both in the current (4th) SCA and in the techno-economic paradigm.



Appendix III: Extended Summary

The present work provides a cultural analysis of contemporary forms of capitalism at the millennial moment of the alleged total triumph of liberal capitalism. From an investigation of knowledge sharing and experience dissemination related to managing practices in a set of industrial investment projects in Hydro, I found that these practices provided a particularistic starting point, an empirical and interpretative springboard, with which a wholistic account of key cultural dimensions of contemporary forms of capitalism could be portrayed.

The present study cannot easily be categorized within any of the common sub-labels within anthropology or the social sciences. It rather bears affinity to what Czarniawska has labeled "creole researchers, hybrid disciplines and pidgin writing" (2007). It is as such a transdisciplinary effort arguing that anthropology might provide an arena for a renewed dialogue for a *new unity of science*. Edelman and Haugerud complain about the fragmented discourses in anthropology of modernity, development and globalization, where "… culture is on proud display while historical political economy and economic and financial globalization is largely absent" (2005: 1). The present thesis is in this light one small effort in trying to remedy this situation. In doing so it necessarily also tries to answer their call as to: "Rather than encourage continued separations of these analytical tracks, we need new intellectual hybrids: adventurous combinations of culture, economy, discourse, power, institutions and history" (ibid.)

The point of departure has been the particularities of *managing practices* in a set of *new*, *internationally* oriented *investment projects* in Hydro. It is a cultural analysis focusing on a set of key dimensions, all derived from the managing practices in Hydro projects. In a few key words the arguably most defining traits of Hydro's investment projects are that they are *intensive* along three dimensions: money, knowledge and technology. These "intensities" also constitute important analytical and organizational dimensions of the thesis.

Moreover, what I have been particularly concerned with is the emergence, the *bringing forth*, of these facilities. That means particular attention is devoted to the *early phases* of the projects, and the early phases of the materialized plants. The focal point of early phases further implies a focus on concept work, idea work, of design and integration work, of the social formation of ideas and abstract instruments. These early aspects of project work are described in Hydro language as "value creation". The later phase of "executing" projects, that is, building the physical plant itself, is called "value control". Thus I am particularly interested in describing and revealing the issues and practices that constitute the notion of "value creation".

The bringing forth of projects is a fragile process of great complexity and depth, contingent upon a multitude of issues, and which may be further enabled or may break down at various junctions of the process. It may also be brought forth unsuccessfully, that is, it becomes and materially instantiates a production facility, but it does not live up to the ideals of its "creators", and thus fails to embody its purpose(s). I find that these purposes are embedded in societal functions and are morally legitimized in much broader terms than pure "profit making".

A core tenet of the present study is the notion that the endurance, or persistence, of the capitalist corporative form is only apparent, and cannot be taken for granted. Like any other enduring patterns of social relations they have to be continually re-enacted and re-created, that is, reproduced. And once the question of reproduction is posed one needs to go beyond the organizational boundary and examine the wider interrelationships that guarantee its reproduction.

Through the "native concept" of "value creation", related practices and appropriate theories I am also at a further remove thus trying to unravel and describe some of the key practices and conceptualizations that pertains to what I will argue is the reproduction of relations of societal wealth creation. By implication this also instigate a focus on the relations of economic inequality, and both wealth creation and the reproduction of inequality is in the present work framed within a perspective of capitalism as a contemporary "world system".

The primary guiding questions of the present work have therefore been: What are these managing practices in investment projects? What do they make and what do they signify? What do they produce, and arguably even more significantly, what do they reproduce? At the first instance, the people and the enactments involved in projects produce ideas, concepts, communicative interactions, designs, drawings, and contracts. These are again abstract anticipations of techno-economically advanced capitalist industrial production plants. Thus they are also anticipations of producing profits. And as shown throughout the present work, these projects provide particular circumstances in which a political and moral universe is reproduced. Projects are thus vehicles for the reproduction of relations on several interconnected levels:

1. Projects as vehicles for the reproduction of relations that produce new projects.
2. Projects as vehicles for the reproduction of the particular corporate organizational form (projects are one of the main devices through which corporations are sustained and grow, that is, the way it secures its continuing existence).
3. Projects as reproduction of the capitalist corporation as vehicle for the reproduction of capitalist economic and social relations.

Finally, the thesis find in the projects investigated an alternative trajectory to the presently *dominating* ethos of a contemporary "financialized" capitalist economy, and thus see:

4. Projects as the reproduction of another and partly alternative variant of capitalist relations of (cultural) reproduction.

Studying the investment projects for establishing new production facilities around the world thus provided my study with some key dimensions attractive to my interests: It had a *local-global* dynamic to it, it involved many forms of *leadership*, *management*, *expertise* and *knowledge intensive* types of work, and it captured one of the major trajectories of *expansion* characteristic of capitalist corporations. The three most pronounced characteristics of the Hydro investment projects, the combination of their money, technology and knowledge intensiveness, is also at the core of the dynamics of capitalism's own genesis and reproduction. From the vantage point of

investigating a cluster of such investment projects, much of the whole complex of contemporary capitalist relations came into view.

Organization and main themes of the thesis

In Part I of the thesis the work is situated in the major relevant debates both in terms of theory and methodology. These issues are possibly of most concern in the academic discourse and are left out of the present summary, but arguably the main contribution in terms of methodology relates to the (further) development and exemplification of a *multi-sited*, *multi-temporal* and *collaborative, action and narrative* oriented *para-ethnography,* also in combination with statistical and historical empirical investigation. I argue that anthropological object construction still "primitivizes" its subjects in different ways, and seek to discuss alternatives.

The three main substantive faces of the present work are organized in the next three parts of the thesis, each designated with one key conceptual construct, respectively "technology" (Part II), "economy" (Part III), and "signification" (Part IV).

In Part II of the thesis, the point of departure is descriptions and analysis questioning "*technology*" in relation to managing projects. In chapter five, "Managing in the Middle Kingdom", the questioning of technology is addressed directly and the "instruments" used in interpreting and mastering both nature and culture in relation to managing projects are discussed. Employing ethnographic material especially from the three Hydro projects in China, cross-cultural issues in the managing of the projects, and thus the instrumentalization of cultural relations, are highlighted. I analyze the understanding and disputes surrounding the role of "technology" in a wide definition of the term, including language-based instruments. The chapter explores the broader themes of cultural formations and flows, knowledge sharing and dissemination, and forms of authority and social organization. Discussions about technology as instrumental human activity and complex causation are offered. The intimate relationship between technology and art is highlighted, advocating a view of

technologically advanced project engineering and managing as a reinvention of the role of the artisan and of engineering as "industrial arts".

In chapter six, "Presencing Projects", I outline some of the operators in what I call the "social reality of construction" – in managing to bring forth industrial projects in Hydro. Here project genesis is especially in focus. Through descriptions of a corpus of empirical material highlighting the emergence of projects, the major projects that have been ethnographically investigated are analyzed in terms of epistemological and ontological questions. I identify core operators to be "process structuring", "concentration and projection" as well as "intersubjective intentionality". Through these phenomena the projects "coming into being", their balancing on the edge of oblivion, and their emergence to presence(ing) and robustness is understood in terms of fundamental processes related to the enabling of an ethos of collective creation and coherence to unfold.

In Part III, the point of departure for the investigation of managing in projects is questions related directly to finance and money, issues of *economy*. In chapter seven, "The Turn to Enchantment", the projects are exposed from the angle of financing and practices in the "economy" more in general. The chapter analyses the financial constraints within which the Hydro projects are embedded and partly constituted. The chapter analyses a set of practices and cultural transformations of both project work and in the corporation more in general, related to their shift to "value based management" and "shareholder value" concerns, that in sum signifies a strong "turn to finance" that has emerged in Hydro more or less since the millennium shift.

In chapter eight, "Wagging the Dog", the analysis from the previous chapter is continued. Here, the turn to finance in Hydro is further investigated, and the wider constraints constitutive to this shift are identified. Through this discussion a set of tensions are revealed that is generalized to the conditions of the integrated globalized capitalist economic system as a whole, as it is instantiated in the contemporary forms of "neoliberal financialization". The disjunction between the productive and the financial economy, ambiguously illustrated by the Hydro case, is analyzed in terms of notions

such as enchantment, virtualism and "accumulation by dispossession". In Hydro a movement from "production" to "value creation" to "value appreciation" is identified. While Hydro is found to be still substantially defined in terms of "production capitalism", this movement is symptomatic of an overall "reenchantment" of the whole capitalist economic and social "world system" of relations, and signifies moreover a contemporary crisis of fundamental scope and depth. Illustrated by Hydro's ambiguous positioning in the contemporary global economy, the hegemony of the finance economy is now akin to the tail that is wagging the productive economy dog.

In Part IV of the thesis, although abundantly addressed also earlier in the thesis, here a more explicit focus is directed towards descriptions and analysis of Hydro signification, the representation or conveying of meaning. In chapter nine, "Incarnation Inc.", the focus is to target industrial "value creation" in projects, the key "native" idiom of the *early phase* in projects, through a more direct focus upon "corporate communication" and impression management. Working from the premise that a universal feature of leadership is its incarnation of some form of organizational processes, I specifically analyze the forms of incarnations that manifest themselves in the context of projects and Hydro as a production oriented capitalist enterprise in the "age of financialized neoliberalism". Here I approach the theme of industrial "value creation" from the side of representation and symbolism. As an immanent part of the financial "turn to enchantment" that has accompanied the neoliberalization of the globalized economy in its current phase, phenomena like signs and identity have moved to the center stage of economic activities. In this chapter I discuss the basis of Hydro's substantial efforts of *language-based* symbolical representations and idioms of their corporate values, "id-entity", position and status. Apart from the significant "turn to finance" analysed earlier, I find that they try to carve out a viable position linking quite coherently their "rhetoric and realizations", while being caught in a complex "crossfire" largely not defined by themselves. I conclude that Hydro so far to a considerable extent has succeeded in that effort.

In chapter ten, "Material Metaphors of Managing", an investigation of the signifying aspects of a set of key *non-language* idioms is performed. Complementing the analysis of what Hydro "stands for" more explicitly in the foregoing chapter, here follows a discussion of non-language, physical but nevertheless expressive "material metaphors" of the professional work life in Hydro projects and more in general in the corporation. Here I interrogate and interpret the *things* in the project environment "themselves" in more direct way, not only relying upon the members own interpretations and vocations. This enables an analysis of things unsaid, unconscious, avoided or possibly un-thought of. Important material metaphors are the (corporate) body, dress codes, houses of significance, like plant layouts and headquarter buildings, and also key machine technology and product materialities. The analysis focuses to a large extent on managing and power along the sex and gender dimensions, because the empirical material offered here present itself fruitfully to such an analysis. Here implications of the fact that managing investment projects to a large extent is "a man's world" are discussed. Thus questions of culture and/or nature are again revoked.

I conclude the work in chapter eleven with a reprise and review of the foregoing representations, with conclusions and an outlook towards continuing and open themes. In the remaining sections of this summary I present a concise overview of some of the suggested main empirical and theoretical contributions of the present work.

Proposed main empirical and theoretical contributions

The thesis provides a unique ethnographic *description* of practices in the realm of *"managing in the global corporation"*. This important empirical domain is in need of ethnographic studies.

The ethnography conveys managing styles, trajectories and traditions that empirically complement and challenges conventional conceptions of corporate "management", both as historically and contemporary conceived. In a generalizing conception I have labeled the managing practices investigated as "*infra managing*", where "infra" is taken from Latin meaning "below". This notion depicts *managing as*

"mediations and meditations", in terms of enabling the realization of various forms of potentials. Mediations refer to both interventions and connecting links, to the bringing about (of effects), and to means of conveying. It also connotes the indirect connections characteristic of the type of managing I seek to describe here. In terms of meditations, the notion as used here relates to the careful, knowledgeable and deep considerations done in these managing practices, which also carries with it the connotations of planning mentally, of conceptual work, of the idea work so central to the managing actions in the projects investigated. It sees managing as a form of *leading from below or behind*, where the main characteristic relates to enabling an intercommunicative atmosphere that allows the bringing forth of coherent and robust collective creations, particularly in the form of economically viable, and socially and morally legitimized industrial projects and plants.

"Accountocracy" and cultural encounters

In terms of the concept of "managing" we might say in view of the Hydro empirical material that in the late 1990s and the turn of the century that the democratic and participatory endowed technocratic, engineering based managing culture in Hydro was seriously challenged. Their major efforts from 1999 at all levels and related to major aspects of their practices, of introducing "finance control" mechanisms for steering both project work and other types of corporate work and functions, including the decision support model in projects – the "capital value process"; key performance indicators, personnel policy in terms of compensation incentives like the stock options program, have in sum challenged the engineering based technocratic managing hegemony and partly supplanted it with a finance control regime. In the contemporary a mixture of a technocratic and what I have labeled an *"accountocratic"* rationality, to coin a term derived from the contemporary business world's arguably most persistent discipline, seems to reign and legitimize management both in Hydro and the business world, indeed the global economy, in general.

Nevertheless, the managing practices in Hydro are continuing to be characterized by the particularities of the "Norwegian work life model" of moral eigenvalues like "democratization", "humanization" and "participation", as forged in Norway and Hydro since the early 1960s. This was particularly well illustrated in the Xi'an project were such Hydro values were highlighted in the efforts of establishing a plant in China. Although "hybridized" in actual project practices, we have in these cross-cultural managing crossroads been able to trace a managing trajectory in Hydro that constitutes an idiosyncratic tradition of managing in the contemporary; resembling many aspects of, but which is different from the main historical traditions of management, the American, German, and British. If we leave out the obvious problems of homogenizing national cultures of managing, the Norwegian tradition, instantiated in particular trajectories by Hydro also in their contemporary global project "assemblages", serves as an alternative that seems to a large extent to have been overlooked in management studies. As such, I have also sought to *"mongrelize management*", to challenge conventional ideas about "management" and managing rationality in the contemporary debates.

What the case has moreover uncovered is the significance of investment projects as unique social or cross-cultural encounters. Overdetermined notions about for example "Chinese culture" or "Hydro culture", from any actor's perspective, might function as a barrier towards constructive communication and interaction in the investment projects. In the cross-cultural encounters that such investment projects are occasioning, especially the Xi'an case illustrates that more open, flexible and dynamic notions about culture are more fruitful for constructive collaboration and a better result project wise. The Wuxi case, on the other hand, illustrates how cultural notions might contribute to the breakdown of new ventures (Røyrvik 2008). Such cultural encounters might be facilitated and enabled in various ways, especially in the more indirect forms of managing I referred to above as "infra managing", but the case material indicates that more direct and explicit "control and command" forms of "cultural management" might rather have counterproductive effects, in the sense that it reifies inter-communicative

cultural processes and unique cultural encounters and thus might turn them into potential stumbling blocks.

"Value creation" and capitalist paradoxes

In light of the above the thesis provides furthermore a description of critical *qualitative differentiations* in the global capitalist economy. From revealing empirically the notion of *"value creation"*, a key concept in Hydro project and corporate managing practices, I conclude that it is positioned in between productive creation on the one side and financial "value origination and appreciation" on the other side. Practices and talk about "value creation" thus taps into, and feeds from, both the broadly defined historical traditions of capitalism, that of "productive capitalism" at the one hand and "financial capitalism" on the other hand. While identifying a major turn to finance in contemporary Hydro practices, symptomatic of the major trend in the overall global economic system, Hydro remains substantially defined by "productive capitalism".

A somewhat radical conclusion that present itself in this respect, is that Hydro's determined focus on investment projects for production at a time of "high finance" in the globalized economy, seems to some extent to *disqualify* them as being defined as a *capitalist* corporation in the strongest or most "purist" sense of the term. This because they have not shifted to a strategy of reaping large profits by investing its stock of money in pure *finance speculation and the credit system*, but have rather continued to invest in production and trade seemingly without testing which strategy would endow that stock of money with the greatest power of breeding. Hydro has not yet chosen to shift to pure financial business, even in the present predicament of "globalized financialization".

Managing nature and culture – "technological transductions"

Managing investment projects is about interpreting and mastering both nature and culture through various instruments of language and materiality; through different

technologies in a broad definition of the term. What I call the "managing of nature" is often referred to as the *"hard side"* of project work, and the "managing of culture" is referred to as the *"soft side"*. This categorization is pragmatic, because when speaking about nature in this sense it refers to the "outer nature" and includes the machine technologies to master it. Machines, however, certainly belongs to culture and while talking about nature in terms of *human* nature it certainly also belongs to the cultural and "soft people issues". The managers themselves consider both the hard and soft side of vital importance, but the latter is frequently seen as more of a challenge. Culture, the "people issue", is always seen as important, but it is even more highlighted in the global, cross-cultural character of the investment projects, and not the least the ones conducted in China. Rendering culture "manageable" implies various forms of instrumentalization, and the research conveys that "managing culture" must be done in subtle ways of enabling cultural encounters, as indicated above in the term "infra managing" (more about culture/nature below related to "the social reality of construction").

Focusing on the "technological" aspects of sharing experiences and "managing culture" in these global projects, in complement to both concepts of technological transfer and translation, I propose the notion of *"transduction"*. "Transduction" and "transducing" come form Latin, meaning "to lead across", to convert as energy or a message into another form. "Transductions" in my use then highlights the conversions and mutual constitution of "materialities and meanings" as it is seen moving across boundaries in a global setting. The concept thus tries to avoid both the pitfalls of technical or social determinism, and sees the bringing forth of projects as involving *recursive and complex causality*. Transduction is moreover found in other analytical concepts mentioned below, such as the materiality of anticipation, and not the least in the notion of "the social reality of construction", partly defined by notions of "bringing forth", or "bringing about", in a combined materializing/abstracting sense.

"The social reality of construction"

In the continuation of these conclusions, the present work proposes the general notion of *"the social reality of construction"* to outline the substance of managing in the investment projects investigated. Fundamentally it describes how projects and projects work on the ontological level most profoundly can be described in terms of *potentiality*. The realm of projects is a domain concerned with bringing forth, realizing, emerging, and enabling potentiality at all levels. A set of key findings related to project potentiality is summarized in a proposed conceptualization of an "*ontology of grounded potentiality"*. The social reality of construction, based in an ontology of grounded potentiality, has some of the following characteristics:

a) The reality of the processes of bringing forth and realizing projects seems to be nothing like the reality of the product of the effort. The clockwork operations of an industrial machine plant are preceded, or *"presenced",* by a reality of processes in projects that are not at all clockwork like. However, based on our investigation, we might also question the whole notion of the "clockworkings" of an industrial plant.

b) The field of knowledge constituting the genesis of productive projects is found to be a form of movement or a process of *"bringing about".* In the interpretation here, the fundamental aspects of creating projects entails efforts of "tuning in to", of "connecting with", of getting in touch with, the wholeness that already is "present" at other levels or "orders" of reality. In project work these are the realms of *ethos, of atmosphere and ambiences* related to the subtleties of communicative action.

c) Some of the major operators revealed in the social reality of construction (in managing projects), like *intersubjective intentionality*, the *ambience of enabling*, the *materiality of anticipation*, suggest that a primary guiding conceptualization could be *coherence* rather than more conventional notions like "coordination and control". Instrumentally this implies an understanding of managing the processes of bringing forth projects as efforts of generating coherence of attention and energy towards goal finding and goal achievement. This understanding is also tried conveyed in the notion of

"infra managing" – managing as mediations and meditations from below and behind – as noted above.

d) In relative opposition and complementation to the social constructivist position, I have argued that the "social reality of construction" is not constituted through a process of "bottom-up" construction of "building blocks" weaving collectively the social fabric. Rather, the "social reality of construction" is characterized by a *whole-part and process-form dialectics* that moves both vertically top-down and bottom-up, and horizontally inside-out and outside-in. Metaphorically illustrated by the Klein-bottle. From the participant's imaginations about the whole, the end result, the purpose, the goal, the "cathedral" or the "pyramid", subsequent processes of *id-entification* are brought forth. This process is the achievement of the "delusional certitude" and "optical illusions" involved in conceptualization, objectification and "thingmaking". Temporary building blocks of some durability are thus constructed, and are again included in a process of re-assembling and instantiating the whole in a new form.

The key issue here is the notion that construction is considered the process of bringing forth, in a *combined materialized and abstracted sense* objects of "id-entified" sub-wholeness out of a background of flow. This is seen as a process of revealing. The critical element is not the construction of wholes out of given building blocks, or the construction of building blocks from which to construct wholes. What is at stake, I argue, in the social reality of construction, is the *genesis of new forms of wholes* perceived as wholes of successively increasing "density", "rigidity" and durability (in the abstracting/materializing sense), out of a background of entangled flows or movement. Again, this argument is sought captured in the proposition of an ontology of "grounded potentiality".

e) I argue that the processes of creating, re-creating, of making and unmaking, of the acute "processuality" and whole-part dynamism in managing investment projects, puts the *fundamental interconnectedness* that the new (quantum) physics has revealed at the "micro-level" also at the forefront of human experiencing in this empirical realm at the "macro-level". The vivid imaginative reality of an *unmade* plant; the levels of

recursivity in its realization in new co-evolving structures, and also for example the extreme bodily embedding and symbolism in the remelting and casting of metal in production, and much more: All testifies to the strong experience that the most solid of (all kinds of) objects are brought forth and informed by more fundamental processes of and in reality. The experiencing reality of "construction" is made constantly aware of the fact that even the most solid of objects melts, molds, changes, and can be recreated in numerous ways. In the remelt casthouse for example, the operators and others are (sub)consciously and bodily, indeed emotionally, informed that the stability of bulk matter, the rigidity, uniformity and coherence of the matter and its mechanical, thermal, chemical and optical properties, they are all fundamentally subjected to the rules of quantum mechanics. In the genesis of projects some of these features are arguably even more pronounced.

f) Some of these characteristics of projects and production, are furthermore mirrored in the entire integrated value chain logic of aluminium business in Hydro, in their conceptualizations of "upstream", "midstream" and "downstream" production and business. The reason for the conventional conceptualization of downstream as the most knowledge intensive might lie in the conflated world-views and models used by researchers in understanding these mechanisms. While no doubt upstream or midstream is "closer" to raw materials, upstream or midstream is also, at least in the context discussed here, where the *potentiality for diverse unfoldments* resides. And there are vast faculties of anticipation, creation, innovation, spirit and technology involved in the *manufacture of material potential*.

"Mixed regimes of rationality" and the "authenticity advantage"

In some important senses, what the thesis has been investigating, as a subject of inquiry, is the practices of managing investment projects conceived of as practices and instatiations of *instrumental rationality*. I conclude not so much either by confirming or criticizing a notion of an all-encompassing system that colonizes the life-world. Rather, from an investigation of an allegedly source domain of these colonizing processes, from

the midst of the purported "cognitive-instrumental value sphere" of the contemporary globalized capitalist economy, as it were, I argue that the particular example investigated here shows that knowledge claims are validated by an entangled corpus of value legitimations which I label "mixed regimes of rationality". The notion of the "system" as a homogeneous and hegemonically colonizing conceptualization seems to be too undifferentiated, and I argue that rather than (only) colonizing the life-world, the source domain itself must be qualitatively differentiated. Furthermore, as a qualified part of the alleged "system domain" the field of this ethnography is differentially constituted by value claims drawing extensively also from the moral and aesthetic-expressive value domain, comprising in sum what I call "mixed regimes of rationality".

That is to say that, in the practices of managing investment projects, arguably instrumental, economic object rationality *par excellence*, activities of goal-*finding,* of collective and communicative interactive wit and will formation, and "self-legislation" were discovered. These aspects bear stronger affinity with the moral domain of modernity, and also with the Praxis and Theoria domain of antiquity. In the Hydro case we found empirical illustrations of both diasynchronous continuity and dramatic changes in the reconfigurations of rationality and validity claims to knowledge. Thus, in the midst of practices of capitalist, industrial and profane production, ostensibly clear and unambiguous instantiations of Habermas' cognitive-instrumental value domain, it has been revealed alternative spaces bringing forth other types of rationality. In light of the Hydro case it is tempting to complement Latour's slogan that "we have never been modern" with *"we have always been modern".* In the midst of the cognitive-instrumental machinery, which according to Weber and Habermas, and others, is colonizing the life-world, it has been revealed "mixed regimes of rationality" where interrelated discourses of the good, the true and the beautiful are found.

Integrated into practical social life in projects are considerations taken from all the value spheres, and thus I conclude after also investigating Hydro's considerable efforts of explicit language-based signification, of their efforts of representing and conveying their "meaning", what they stand for, through statements of values, mission

and talents in various corporate communication materials, that practices and idioms of representation are to a somewhat surprising degree in coherence. An insistence upon a continuing connection between signs and their referents prevail. In an economy of signs, of brands, logos and digital money, Hydro is still advocating a form of *rationalistic sensibility*.

Although standing by no means in a one-to-one relationship, for example the extensive analysis of Hydro's "turn to finance" points in many respects in another direction, I find that managing in projects to a large extent *instantiate in practice the value integration* sought expressed formally through various means of communication. In combination with observational data and member's descriptions of Hydro "corporate culture" as characterized by a rational and sober, quiet-going but confident and powerful seriousness, the study concludes that this exemplify a *culture of authenticity* that in many respects is at odds with the post-modern "signs of the time" at the millennial moment. In the instrumental language of the majority of business management literature we might propose this as an *authenticity advantage*.

A radical naturalism in anthropology

Finally, turning to anthropology itself, I argue for a shift towards a *radical naturalism* in the analysis of the social and cultural. A naturalism that may possibly investigate, describe and account for the subtlest forms of communicative interactions and creative constructions. A naturalism were not only the *para-ethnographic* has its place both as method of investigation and as a form of writing, but were the para-psychological meets modern advances in physics/metaphysics to account for and describe the fundamental *undividedness* of the universe, of the basic entanglement of nature, and of relationality as the deepest characteristic of the socio-natural fabric.

When the frontiers of physics seems to be telling us that *everything in the universe is already connected*, both issues of wholism, coherence, and union on the one hand, and of unfolding, objectification, and fragmentation on the other needs re-considerations. Thus some of the classical questions of social science related to

alienation, anomie, disassocation and psychopatology are still made relevant, but from another point of departure. Likewise might propositions for alternative paths and possible remedies be asked in new ways from a new starting point.

Anthropology with its primary concern with relations can in a renewed dialog with the new natural sciences be reaffirmed or re-grounded on a deeper and naturalistically based ontological level. In such a perspective we might ask questions about relations seen not *primarily* as socially constructed, but seen as a key feature of the nature of the entire universe. The emerging new worldview sees the whole of nature on the most fundamental levels as a seamless unitary whole, with man's mind and body and cultural creations, metaphorically like a Klein-bottle, unambiguously embedded although "implicately enfolded" within the whole panorama of the interconnected natural universe.

The above prospect opens up not only for new questions and a renewed and reformed dialogue between the sciences, a "third culture", but also for a reinvention of anthropology and the role of our discipline as an arena for a *new unity of science*. In the crisis of the discipline instigated by the "loss of the local" and the "extinction" of the "pre-modern primitive" anthropology not only lost fascinating subjects and objects of study, but it instigated a self-suggestive melancholy of a loss of itself. However, new "worlds" are continuously created and the crisis might enable us to better seem them. If so, the spectacle that is nature, cultural creation and diversity in all of its myriad manifestations might be rediscovered anew.

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