

6: Building theoretical contributions in Sustainable operations management – an introduction to the chapters

This section of the book concerns the theoretical developments in the sustainable operations management research field. Sustainable operations management is a growing research field with clear and distinctive roots in organizational and managerial practice, linking to mainstream research on operations management (Angell & Klassen, 1999; Pagell & Shechenko, 2014). It has also a strong emphasis on pragmatism, predominantly touting technical papers and **best-case examples** (Seuring & Müller, 2008; Min & Kim, 2012). For this reason, it has been heralded by managers and other practitioners (Joas et al, 2014). The route from research results to the practical implementation of concepts in business seen in examples such as the use of Life cycle assessments and cradle-to-cradle principles in public purchasing policies are relatively fast.

An early contribution to the sustainable operations management research field includes Roy & Whelan (1992), who provided an ideal “best case” example of recycling electronic waste through value chain collaboration and emphasized the role of cooperative dialogue across the parties involved. Similarly, Lamming & Hampson (1996) reported from case studies in several industries. But whereas the contributions from prescriptive case studies and other normative contributions are of much relevance to sustainable practice, the socio-economic theoretical base of sustainable operation management is rather underdeveloped and not sufficiently discussed in the literature (Blok et al, 2015; Halldorson et al, 2007). Furthermore, some would claim it is also imbued with moral thickness, which sometimes makes normative prescription stand in the way for achieving insights about the true state of environmental affairs (Lomborg, 2003). We subscribe to a different view here, thinking that embracing the unfolding debate and accepting that both observable facts and assigned values must be part of the discussion.

Given the success of a pragmatic approach to sustainable operations management, it is a sensible question to ask: why engage in theory development discussions in a field, where studies of practice seem to be both predominant and successful? Until recently, concepts like biosphere and ecosystem have been almost absent from business research (Gladwin et al, 1995). We think there are good reasons to discuss theoretical perspectives in relation to further development of SOM.

Any manager, student or researcher concerned with sustainable operations management implicitly or explicitly build on existing ideas about sustainability, operations and management. These ideas of the field are rooted within a certain theoretical perspective, with particular focus points as well as **blind spots**, which restricts theorizing. This leads to a form of collective myopia in a certain field, where – in retrospect - obvious ways of reframing a situation – for instance, identifying waste as a potentially valuable resource are overlooked by the dominant perspective. Take as an example the missing focus on recycled paper as a potential resource. It was only late in paper and pulp production that industrialists realized paper recycling as a potentially valuable resource (Strasser, 2000). Thinking in the entrepreneurial processes that leads to identification of new value creating opportunities from re-using what earlier was considered as waste partly illuminates the value of applying novel perspective to enhance sustainability. For instance, some would claim that our current understanding of sustainability and how to lessen the environmental footprint of current manufacturing practices and bring the natural environment back to some form of order rests on a false assumption about the nature of the natural environment, based on the Holocene (Villumsen et al, 2017).

The **Holocene** denotes the geological epoch following the last ice age, according to the International Chronostratigraphic Chart of the International Commission on Stratigraphy. It is noted that only during the Holocene, the biosphere possessing attributes dependent on climate, hydrology, soils, organisms have taken on familiar shapes, i.e. with forests, lakes, rivers, grasslands and so on (Villumsen et al, 2017). The Holocene has been a period with a stable climate with regular rainfall patterns. This is widely believed to have helped, and maybe preconditioned, the development of human civilization. The Holocene stability is ending as human activities such as production, consumption and transportation are increasingly affecting the biosphere. Some of the consequences for nature and for human societies depending on natural resources are climate change on a global level, habitat destruction (especially by deforestation), soil degradation, and overexploitation of many abiotic as well as biotic resources. It has been proposed that the we are entering into the **Anthropocene** (Crutzen 2002). According to the geological definition, the Anthropocene denotes a geological epoch in which human societies have become a planetary force, comparable to volcanism, tectonism, glaciation and weathering making all ecosystems

Anthropogenic. The Anthropocene is —the age of Man, when humans take control over nature and establish a —sustainable and equitable stewardship of Earth's ecosystems for optimal functioning. Clearly, thinking of the natural environment as being controlled by human activity opens new avenues of understanding and opens quite new research questions, belief systems and schools of thought relating to the end-goals and functions of sustainable operations management.

Embracing theoretical plurality in Sustainable operations management

Thus, the development and explicit recognition of theoretical pluralism should be encouraged within SOM. Rather than lament or withdraw from **theoretical multiplexity**, we hope many researchers with us will engulf in this diversity of theoretical perspectives. Exploring different theoretical perspectives not only opens up for identifying novel ideas and areas of scrutiny, but also makes decision makers aware of the assumptions upon which their current theoretical perspective build. Understanding better the underlying assumptions and ideas of a theoretical perspective and how they shape the questions and frames the issues practitioners deal with. Understanding makes it easier to understand both the strengths and the limits of current theorizing. Second, but related to the first point, realizing that there are other ways of seeing reality and engaging other assumptions and conceptual lenses makes it possible to view practical problems from new angles, come up with new framings and apply new ideas on existing problems. Furthermore, it might make it easier to communicate with others, as it will be easier to understand their perspectives and respective arguments and desired lines of action. An interesting example is provided by Angell & Klassen (1999), who provides two different perspectives on sustainability available in the literature: one seeing sustainability targets as an additional restraint, where focus is on how operations successfully can buffer themselves from environmental demands and one perspective focusing on sustainability as an integral component of the operations, and see these as a potential lever of performance (for an elaboration of this second perspective, see also the much-cited contribution by Porter & Linde, 1995).

In the fields of supply chain management (SCM) purchasing and supply management (PSM) and operations management (OM) there are already several literature reviews available, which as a side issue also provide some insights into the theoretical underpinnings of the field and in

particular how theories from other fields can be applied and fruitfully also be developed within these contexts. There is a reasonable consensus around the phenomenon to be explained – the explananda. Ahi & Searcy (2013) identify 12 unique definitions of **Sustainable Supply chain management**, but also shows that they have a number of traits in common: a focus on economic and social and a keen interest in understanding the coordination of activities (or flows) across organizational boundaries. Seuring & Müller (2008, p.1700) offers a definition of SCM, which has gained some influence with respect to the theory-building also in the area of SOM. They define sustainable supply chain management as “the management of material, information and capital flows as well as cooperation among companies along the supply chain while taking goals from all three dimensions of sustainable development, i.e. economic, environmental and social into account, which are derived from customer and stakeholder requirements”.

In this sense, SOM perspective differs from other approaches to understanding environmental impact, such as product stewardship and other life-cycle assessment studies or cost-benefit considerations. These types of studies typically treat organizational behaviour as embedded in a wider system comprised of several interacting parties (Kärnä & Heiskanen, 1998; Öberg et al, 2012). The conceptual contribution on business models in the circular economy by Batista in this section of the book provides a nice example. In this contribution, focus is on the reliance on supply chain capabilities in order to perform in a circular economy. By addressing and differentiating the notion of value and how this links back to supply chains, interesting insights with respect to the development of value propositions in a circular economy context is provided. Other studies tend to focus on the dyadic level, scrutinizing the relationship between a focal company and its first-tier suppliers (Schöggl et al, 2016). In contrast, an interdependent, network or systems-based approach, takes into account both the direct and indirect effects of actors initiating or changing behaviours. In this sense, sustainable operations management has novel insights to offer. Some of the most influential perspectives include transaction cost theory, the resource-based view, principal-agent theory and business network approaches (Halldorsson et al, 2007). Other perspective, less influential, but still of importance include political economy and dynamic capabilities among others. There are plenty of relevant presentations already who systematically scrutinize how these theoretical angles influence perspectives, approaches and puzzles dealt with.

Sustainable operations management as a field is obviously also drawing from these broader theoretical fields. But at the same time, SOM seek to explain other aspects as well that relates to operations becoming sustainable or managing operations inside a sustainability regime. Within this frame of understanding, Seuring (2011) reviews a number of the several literature reviews made with an eye of establishing the current theoretical status of the field and points to “a few examples of deliberate theory building” (Seuring, 2011, p.472).

Theories which addresses barriers and triggering events, (inter)organizational adaptation and transformation comes to the fore (Seuring & Müller, 2008). In many ways sustainable operations represents a systemic challenge in the sense, that it is hard to capture and understand the many co-adjustments needed throughout a network of organizational actors in order to make a real and enduring impact. There are several contributions discussing stakeholder pressure towards changing practices in the focal company, responsible for design and interfacing directly with the customer (Cramer, 2000; Roberts, 2003). Additionally, theory-building literature discuss the pressure from the focal company (and stakeholders) towards other members of the supply network (Boyd et al, 2007). This literature is linked to contributions discussing adaptation issues. Literature that concerns how organizations adapt to external fiat are increasingly used within research and is providing new lenses for understanding the issues faced. One important theoretical perspective is **institutional theory**, which is focusing on the processes of organizational legitimacy and what organizations do (or does not do) in order to conform with regulations, social cognitions and expectations in society. Related to this, but with a different approach to understanding how pressure is exercised on focal organizations (and their suppliers) is **stakeholder theory** which, at its core apply the balancing and reciprocity of diverse human interests. **The triple bottom line framework**, around which many discussions concerning the definition of sustainability in SOM revolves, draws its core ideas and assumptions from stakeholder theory approaches. The paper by Nunes et al in this section of the book makes an interesting contributing to this discussion. While it has been a core axiom and a common belief in many studies of stakeholders' influence on sustainability issues, that bad publicity regarding a company's environmental impact

would affect stakeholders value assessment of that company (and thus be reflected in the stock market) their study shows surprisingly small effects with respect to this.

Second, still more literature seeking to understand better the organization and management issues related to sustainable operations management seeks to bridge to areas such as change management and (inter)organizational transitions. Only recently has literature concerning **organizational transition** been applied to understand OM issues (Omar et al, 2012). These perspectives provide insights with respect to the organizational and inter-organizational challenges faced by change agents seeking to bend or even break with existing practices within and across organizational boundaries. One issue concerns the capabilities of firms with respect to greening supply chains (Busse et al, 2016) and managing sustainable supply networks (De Bakker & Nijhof, 2002). Another issue concerns the barriers faced by focal firms seeking to transform their supply network. Obviously, discussions on innovation ties in with the notion of organizational and systemic transition. In the contribution by Nishant et al in this section, a study of sustainability-oriented innovation in the aviation industry and how this links to achieving environmental impact is presented. The authors of this paper present an empirically-grounded typology of Sustainability-Oriented Innovation with a focus on environmental sustainability.

Hopefully, this brief overview of the theoretical fault lines of sustainable operations management and how it ties in with a broader theoretical debate on sustainability issue within the business, organizations and management literature has provided some backdrop for reading and digesting the three paper at hand in this section of our book.

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