

Creating Human Life Itself

The Emerging Meanings of Reproductive Cells among Science, State and Religion

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Abstract In the past decades, reproductive biomedicine has quickly developed and become widespread, producing a number of new options that have challenged the definition of kinship and parenthood, bodies and gender relations and even of nature and life itself. Reproductive biomedicine is embedded in the ongoing construction of our wider social imagination, producing a re-imagining of the “facts of life”. Here, we can see how biomedical knowledge fosters a reframing of material bodily tissues. The same biological material can assume a different ontological status according to the socio-material processes in which it is embedded. Exploring the process of bio-objectification of embryos in an Italian context, this introduction describes how the equation between embryos and human life itself emerges inside and outside of labs and illustrates how the biomedical conceptualization of embryo is strongly dominated by moral and ethical concerns.

Keywords: Assisted reproductive technologies, embryo, ontological shifting, bio-objectification, human life itself.

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I. Introduction

In August 2006 I participated in my first EASST (European Association for the Study of Science and Technology) Conference in Lausanne, Switzerland. The title of the conference was *Reviewing Humanness: Bodies, Technologies and Spaces*, and I thought this would be the perfect place to present a piece of my then ongoing PhD work in the field of Assisted Reproductive Technologies (ART). It was one of my first presentations at an international conference and my colleague Roberto Lusardi and I presented a joint paper on the construction of the body in ART centres and intensive care units (Lusardi and Perrotta 2006). At the end of our

presentation, a feminist British scholar (this is how she introduced herself) asked me: “You have talked a lot about this *embryo*, Why do you call it embryo? Are you a Vaticanist? I see just a clump of cells”. Aside from the shock, I answered that it was a fieldwork-related effect, since all of the professionals and patients I met referred to “embryos” in their narratives. However, this question pointed out what I had taken for granted in my research. I want to thank this (unknown) colleague, because her comment fostered my reflection on what an embryo is and how its meanings are relatively stabilized both inside and outside of clinics. In fact, although during my fieldwork I became familiar with the biological nomenclature – which refers to zygotes, blastomeres, morulae, blastocysts and so on – spending time with biologists in reproductive labs I also absorbed what in the Italian context is taken for granted, and is indeed quite widespread around the globe: an embryo is a fertilized egg after cellular division (even though it is almost never specified in ART discourse when an embryo stops being an embryo and becomes something else, like a foetus). Moreover and more relevantly for this special issue, “the embryo” is conceptualized as the first stage of human life, and this notion is so stabilized in some contexts – such as the Italian one and others – that it had become unchallenged and even unquestioned in Italian public debate.

Taking an STS perspective, this special issue aims at challenging this conceptualization of embryos as well as the emerging meanings of reproductive cells, using the Italian case as a prime example for the study of how a *bio-object* emerges from a network of heterogeneous elements and becomes relatively stable.

In the introduction to a recent edited book evocatively titled *Bio-Objects: Life in the 21st Century* (Vermeulen *et al.* 2012), Andrew Webster defines the bio-object as “a useful conceptual device or heuristic to refer to socio-technical phenomena where we see a new mixture of relations to life or to which ‘life’ is attributed” (Webster 2012, 6). Through the bio-objectification process, novel socio-technical – including political – relations are made possible. At the same time, the possible assemblages can be more or less robust and different bio-objects are more or less able to take their shape through time and space.

To put this in Actor-Network Theory (ANT) terms, studying the bio-objectification process means studying how the durable orderings are achieved, how bio-objects become such, how they are put in place and stay that way and how change comes about. On the other hand, following the so-called ecological approach (Star and Griesemer 1989; Fujimura 1995), what is interesting in this process is the construction of hybrid arrangements in which bio-objects move, being constantly renegotiated through an ecology of actions. Susan Leigh Star and James Griesemer, in their seminal article published in 1989, propose to take into account the coexistence of complex “multiple translations”. They stress the collective work of coordination, alignment mechanisms and translation chains between the different actors and worlds involved. To study the embryo as a

bio-object, therefore, we should be able to describe its translations by different actors, including ART professionals, patients, politicians, scientists, bio-ethicists and social movements (supporting patient rights or moral and religious instances). Moreover, to explore the multiple translations we need to follow the intricacies of actors' relationships and pay greater attention to powerless actors or "dissidents" within the enrolled actors (Star 1991). The Italian case illustrates how the construction of the bio-object embryo, with its current shape, produces a demarcation between those interested in keeping embryos as an abstract model of human life in a nutshell, and those who see embryos as future possibilities and hope, both for reproductive purposes and biomedical research.

The Italian embryo is an excellent example of how a bio-object is made. How does the special ontological status of human embryos come about? How is this ontological status constructed inside and outside of reproductive laboratories? How is the idea of human life itself "created"?

To answer these questions, the core idea is to explore what Charis Thompson (formerly Charis Cussins) defined in *ontological choreography* (Cussins 1996; Thompson 2005). With the term "ontological choreography", Thompson refers to:

The dynamic coordination of the technical, scientific, kinship, gender, emotional, legal, political, and financial aspects of ART clinics. What might appear as an undifferentiated hybrid mess is actually a deftly balanced coming together of things that are generally considered parts of different ontological orders (part of nature, part of the self, part of society). These elements have to be coordinated in highly staged ways so as to get on with the task at hand: producing parents, children, and everything that is needed for their recognition as such (Thompson 2005, 8).

Therefore, the notion of ontological choreography aims to stress the dramatic ongoing change in the ontological statute of human gametes and embryos, which in ART centres changes from potential person to element of the reproduction of a person and, eventually, to a non-person. An embryo, for instance, can be a potential person when it is part of the treatment, or a suspended animation when it is frozen, or a biological source selected for research purposes, or biological material of poor quality when it is unsuitable to any of the available purposes. Therefore, ART practices become loci of achievement, multiplication and coordination of ontological variations.

Here the focus is not on the choreography (i.e., the coordinated action of ontologically heterogeneous elements), but on the *ontological shifting*: how multiple translations generate a network able to crystallize biological substances into a specific shape with a specific array of meanings, producing bio-objects. The empirical case under analysis in this special issue is the current changes in the ontological status of cells in Italian reproductive biomedicine and beyond. In other words, how did a clump of cells

become the beginning of human life and even a proto-person?

Answering this question will provide a twofold opportunity. From an empirical point of view, it will allow exploration and explanation of many paradoxes that characterize the Italian case, where embryos have more rights (or at least, they had for a while, as we will see) than foetuses and even mothers; where some practices are illegal in the country (such as gamete donation) but people who go abroad to undergo the same practices are not blamed; where the State openly discriminates against some of its citizens, such as singles or homosexual couples (who are not allowed to undergo treatments in Italy), but people are still willing to cross the border for the benefit of treatments that are illegal in their own country (if they can afford to go abroad); where surplus embryos cannot be donated to research or other patients for reproductive purposes, or be destroyed (since embryos are considered people at the cellular stage), but they can be “abandoned” and kept frozen; where the State forbids research on national embryos, while allowing scientists to import foreign stem cell lines.

This special issue aims at exploring the bio-objectification of reproductive cells in an Italian context, from the perspectives of a multitude of actors. The material and regulatory aspects of life have already been under investigation in STS (Hauskeller *et al.* 2005; Waldby and Mitchell 2006; Sunder Rajan 2006; Franklin 2007; Cooper 2008 – to mention just a few examples of this strand of research), and this special issue represents an interdisciplinary enrichment of the STS literature on the study of the relationship between life and technoscience.

The first contribution is a lecture by Sarah Franklin on In Vitro Fertilization (IVF) as a visual culture. The conversion of the human embryo into both a tool and a lens allows the author to revisit a series of broad sociological questions concerning technology, reproduction, genealogy and the future of biological control.

The *Essays* section offers four contributions. The article by Patrick Hanafin, exploring the relationship between biopolitics, law and reproductive citizenship, proposes an interesting excursus of the Italian regulatory path on ART after the establishment of the Italian law in 2004, focusing on how different individuals and groups challenged the regulation in local, national and international courts. Alessandra Gribaldo’s article focuses on the concept of “micro-reproduction”, on the relevance of visual tools in this domain and the processes of constant re-signification that involve professionals as well as prospective parents. The contribution by Giulia Zanini illustrates the variable meaning of donor embryos for Italian cross-border reproductive travellers approaching donor conception, analysing how they make sense of different embryos’ trajectories. The article by Lorenzo Beltrame discusses the cultural meaning and political uses of ethical stem cells in Italy, following the embryo and its conceptualization in the biomedical research domain.

The *Conversations* section presents two contributions that pave the

way for the debate on the ART-stem cell research interface; the first contains three comments by Laura Lucia Parolin, Ingrid Metzler and Alexander Schuster on the book *Fecondazione E(s)terologa* by Carlo Flamigni and Andrea Borini; the second collects two interviews with top Italian scientists in the field of stem cell research, Elena Cattaneo and Giuseppe Testa, introduced by a reflection on the Italian pathways of stem cells by Assunta Viteritti.

In the following pages I shall introduce the main issues converging in this special issue, and try to provide a framework that makes the Italian case more understandable to an international public. First, I shall introduce the Italian national regulation on ART and the moral monopoly imposed by the Catholic front. Although the attempt to create a new moral order in the country failed, it created a gap between politics and lay people, and moral arguments and daily life. Secondly, I shall discuss the process of bio-objectification of embryos that causes *in vitro embryo* to become *embryo as the beginning of life* and *embryo as a proto-person*. Finally, I will discuss the construction of “the embryo” as an abstract representation of (human) *Life Itself* (Franklin 2000). Regarding word use, I do not use the word “creation” to refer to the production of embryos in ART labs, but to the sociomaterial construction of the equivalence between embryos and human life itself, both inside and outside of labs.

2. The Moral Monopoly and the Italian Regulation on ART

The introduction of the law on ART in 2004¹ was the result of a long negotiation process carried out by numerous political and social actors, which deployed different rationalities and resources to support diverse proposals for change. The debate on the ethical aspects of ART was extremely heated, with radically opposed moral and religious stances being taken. On the one hand, the Catholic front – highly influential in the Italian debate – proposed that restrictions should be imposed on therapeutic treatments by virtue of the (moral) argument that an embryo is not only a life-form but also a future person. On the other hand, there were those who argued that it was necessary to go beyond biological limits in order to adjust reproductive capacity to the life-choices typical of contemporary society.

The position of the Catholic Church was expressed in 1995 by John Paul II in the evangelical letter “*Evangelium Vitae*”, in which the Pope argued that biomedical technologies (here referring to the manipulation of gametes in the lab) go well beyond a reasonable dominion over nature. The main criticism was directed at non-therapeutic research on human embryos and their destruction or cryopreservation, the selection of char-

¹ Law No. 40, February 19, 2004, *Regulations relating to medically assisted procreation* published in the Official Gazette No. 45, February 24, 2004.

acteristics or gender of the newborn, heterologous fertilization and all cases of surrogate motherhood.

After a long line of attempts, Law 40 forbade surrogate motherhood of any kind, the insemination of homosexual couples and singles, insemination after the partner's death and of women in non-precocious menopause. Moreover, Law 40 increased penalties for all violations² and introduced "new" restrictions in addition to those already present: heterologous fertilization (i.e., with gametes from donors external to the couple), the production of more than three embryos per cycle, the cryoconservation of embryos, the pre-implantation diagnosis (for a discussion on the limitations operating in Italy before Law 40 see Parolin and Perrotta 2012). Moreover, the law ordered that all embryos produced (no more than three) must be transferred to the uterus in any circumstances. What is peculiar is that the law gave embryos rights that not even a foetus has, since Law 194 of 1978 on abortion has not been overturned or modified to create further restrictions on abortion (for a discussion on the differences among the debate on ART and that on abortion see Metzler in this issue).

Furthermore, by equating the embryo with a person, Law 40 made its rights prevail over those of the mother. The law was widely discussed and criticised in regard to both its ethical and clinical aspects. Scientific procedures were paralysed, while the clandestine market and the search for assisted reproduction in other more permissive countries were stimulated. A broad political movement developed around these criticisms and mobilized public opinion for some months, leading to a referendum to abrogate the law. However, the referendum was not successful, because a quorum (50% plus one of those entitled to vote) was not reached (just 25.3% voted).

The bioethical position expressed by the law accommodates the conservative and patriarchal models of gender and familial relations, creating a moral monopoly that impedes a pluralist development of multi-ethical frameworks. Defining the rights of embryos as those of proto-citizens was in fact meant to establish a monolithic view of bio-ethical issues (Hanafin 2007). However, this does not seem to correspond to the uses and customs in place. Referring to the year 2010, the annual report³ of the Health Ministry to the parliament argues that 69,797 couples have undergone In Vitro Fertilization (IVF) or IntraCyttoplasmic Sperm Injection (ICSI) treatments, and through these techniques 15,274 pregnancies were ob-

² The law stated that breaches of its provisions were to be punished with imprisonment for up to 6 years and a fine of up to €150,000 for operators, as well as immediate closure of the center.

³ *Relazione del Ministero della Salute al Parlamento Italiano sullo stato di attuazione della legge contenente norme in materia di procreazione medicalmente assistita* (Legge 19 Febbraio 2004, n. 40, articolo 15) – Anno 2010 – issued by the Ministry of Health on 12 June 2012.

tained. Moreover, the limitations imposed by the law have generated reproductive tourism to countries with more liberal regimes.

A recent study by the European Society for Human Reproduction (Shenfield *et al.* 2010) claims that Italians are first in the world for procreative tourism (31.8% of all foreign patients) and that the main reason why couples are turning to centres abroad is the national law (70.6% of cases among Italian patients). Some authors refer to this phenomenon as “cross-border reproductive care” (Inhorn and Gürtin 2011) to avoid the negative connotation related to the word “tourism”, and emphasize that there is an element of “forced necessity”. Interestingly, cross-border reproductive care in Italy is not socially stigmatized in the public debate. It saw considerable development in recent years and gave cross-border patients many new choices regarding conception practices, disclosing how prospective parents understand reproductive cells and embryos as elements of their parental project (see Zanini in this issue).

Finally, several couples, often supported by fertility centres and associations, appealed to local courts, to the Italian Constitutional Court and, most recently, to the Court of First Instance of the European Court of Human Rights in Strasbourg to modify some of the restrictions (for a detailed discussion on the judicial interventions see Hanafin in this issue). Many of the limitations imposed by the law lasted till 2009, when the Italian Constitutional Court declared the law partially unconstitutional. Beyond surrogacy, which is not even on the public agenda, two main prohibitions still remain in force: heterologous insemination and access to the treatments, which is still not permitted to homosexual couples and singles. On the one hand, the lack of willingness of the main political parties (both the right and left wings) to revise the law is due to the fact that this is still a highly sensitive issue for Catholics. On the other hand, the heterogeneous alliances that crystallized the embryo as a proto-citizen are aligned with the dominant narrative of a conservative Catholic-oriented morality and ethics, which remove, cover and annihilate all antagonistic narratives, fostering a monolithic view of bioethical issues.

3. What is an Embryo? Embryos-in-the-making

Sarah Franklin and Celia Roberts (2003) have shown how the embryo represents a social material actor playing within a set of technologies and social practices, and how it is setup through these practices (like making a picture of the embryo, or selecting, transferring and freezing it). The embryo’s social life, as it is called in the scholars’ wording, becomes important as well as its life in the public and political debate (Mulkay 1997).

Referring to the work of Donna Haraway, Sarah Franklin remarkably notes that the embryo is a cyborg:

[It] is as much a product of high-tech procedures, such as ovulation induction and cryopreservation, as it is of hope for a child and the desire for technological assistance to overcome infertility. (Franklin 2006, 173)

The embryo is at the same time a product of biomedical knowledge, lab procedures and patients' alignment to the treatment, as well as the hope for a child, an essential element of the parental project, and the material production of the desire for parenthood. As many other kinds of cells, *in vitro* embryos have a limited "life" in culture. The extracorporeal embryos cannot reach the foetal stage outside the womb. They could not exist as we know them without visualization devices (Franklin in this issue) that make them available to professionals (Perrotta 2008a), patients (Gribaldo in this issue) and the lay public (Lie 2012). As Merete Lie (2012) has shown, these images represent reproductive cells as autonomous and independent entities. Similar to what happens when the foetus is detached from the womb and presented as an individual, embryos have an appearance detached from the body, seemingly independent of it.

What I want to claim here is that the embryo as a bio-object, emerging from multiple translations, is multiple itself: abstract and concrete, material and conceptual, general and specific. However, conceptualizing the embryo as an immaterial entity or as the product of biomedical technologies, reproductive knowledge and (unpredictable) bodies results in extremely different consequences. For instance, a regulation built on a general, conceptual and abstract embryo fails to take into account the complex heterogeneous network from which material, specific and concrete embryos emerge. Wombs, bodies and their reactions to hormonal treatments, as well as patients' lives, affective relationships and their ability to match the treatment schedules disappear in front of a purified idea of an embryo.

The autonomous life of the embryo is built in reproductive centres as well as in other loci. ART centres enable infertile couples to achieve their goal by means of technology. But while the couples' objective is pregnancy ('the babe in arms'), the technoscientific objective becomes the production of the embryo (for a detailed discussion see Perrotta 2008b). More precisely, the production of a reasonable number of embryos (or the three permitted by law between 2004 and 2009), if possible belonging to the best class (according to a classification scale in use), or at least ones which are implantable or cryoconservable. When the process comes to an end (positively) and the embryos have been produced, they are transferred to the "natural" site of reproduction, i.e., the womb. The embryos' reintroduction into the patient's uterus mark the completion of the organizational process, although two weeks later might yield to a completely different result from the patients' point of view (a pregnancy or a failure).

However, in the need to manage the pressure of high rates of failure, the ART centres frame their success as their ability to "give embryos back

to patients". As I have argued elsewhere (Perrotta 2008b), the transfer is a key stage in the reproduction process in the sense that it is the moment when responsibility for a successful outcome passes from the ART centre to the patient. If there are embryos (and usually there are some), the centre has done its duty and the team must wait and see if the patient's body will let the embryos implant themselves. Responsibility is not explicitly attributed, but it is clear that everything "technically" possible has been done, and now "nature" must take its course.

To "give embryos back to patients" is not accomplished solely with embryo-transfer; embryos are showed on monitors, their pictures are often attached to the clinical records and even commented on by the personnel with utterances such as "*look at your little embryos!*" (Perrotta 2008a). As Franklin argues in her lecture, witnessing a live human embryo is "special". These images merge highly specialized scientific imaging apparatus with intimate human biological substance. Moreover, as Gribaldo and Zanini show in this issue, the possibility of watching one's own embryos, in addition to the patients' expectations, produces different understandings of embryos themselves, according to the configurations of elements in which they are embedded. Anyhow, for reasons related to the organizational work of ART centres, in several circumstances the lab is one of the loci where the ontological shifting from the *in vitro embryo* to the *embryo as the beginning of human life* is accomplished.

3.1. The Personification of Embryos

With the introduction of Law 40 and its prohibition on freezing embryos (that lasted until 2009), it was necessary to take action to resolve some ethically controversial issues: what was to be done with the embryos produced before the law, which every centre kept in storage? How could the principle of equating the embryo with a person, and therefore guaranteeing it the same rights, be applied retrospectively to the already-existing embryos?

When Law 40 was enacted, in Italy there were around 30,000 cryoconserved embryos stored in several centres spread around the country. Some of these embryos were supposed to be used by aspiring parents in further attempts to obtain a pregnancy. But what would have happened to those belonging to couples who had already had children and did not want any more? Or in cases where the couple did not intend to procreate further (because of separation, adoption, age)? In this case, the law states that the embryos produced and frozen before its enactment must be kept in their actual state at the expense of the couple, or they must be declared "abandoned" or "neglected" (*in stato di abbandono* is the expression used in the law). Couples were therefore required to pay for the maintenance of their own embryos (the costs relative to the cryoconservation of embryos varied from centre to centre, but they range between 500 and 1000

Euros a year), or sign an abandonment form with which they lose all rights over their embryos. Law 40 required the establishment of a national embryo bank, which has never been created (for an updated discussion of the failure of the National Biobank, see Zanini, this issue). Instructions have not yet been issued on what is to be done with abandoned embryos, which are currently awaiting conservation in what are now often called “orphan embryo banks”. What is certain is that other options – such as donation to other couples or for research purposes, or disposal, which represented 77% of choices before the enactment of the law (Cattoli *et al.* 2005) – are still illegal.

Although expressions like “orphan embryos”, “abandoned embryos” and “adoption of embryos” recall the principle of the law which equates them with people, these definitions reproduce and embed the ontological shift from the *in vitro embryo* to the *embryo as a proto-person*. On the one hand, this is an expression of the moral monopoly I have presented in one of the previous sections. On the other, this understanding of embryos is problematic and morally controversial, especially in relation to the effects it produces on the ART stem cell research interface. Even though embryos produced before or after the introduction of the law cannot be used for research purposes, Law 40 (nor other laws) does not forbid stem cell research in the country. Nevertheless, the prohibition on embryo research envisaged by Law 40 is not a legal preclusion of research on embryonic cell lines created in other countries – also because EU legislation stipulates the free circulation of goods and therefore makes it impossible to prohibit the importing of stem cells. Therefore, Italian scientists are allowed to do stem cell research in Italy, as long as they are not “killing Italian embryos” (Melzner 2011).

Since the ambiguity of banning research on embryos by virtue of their alleged sacredness (for a discussion on the tension between the sacred and the profane that characterizes embryos, see Thompson 2005), the scientists who work with human embryonic stem cells (hESCs) are considered “unethical”, and are tolerated but not publicly supported. As the interviews with Elena Cattaneo and Giuseppe Testa in this issue illustrate, the Italian public debate reflects this ambiguity reproducing an ethical contrast between the research on adult stem cells (especially iPS – Induced Pluripotent Stem Cells) and embryonic stem cells.

3.2. Embryo, or Non-embryo: That is the Question

The process of bio-objectification of an *embryo as a proto-person* fostered the proliferation of forms of non-embryo. In his contribution to this special issue, Lorenzo Beltrame, analysing the debate on “ethical stem cells”, presents an interesting analysis of the advent of several forms of quasi-embryos, deployed to circumvent the Italian regulatory regime and allow research on stem cells. Another case of non-embryos as a residual

category created to sidestep the meanings attached to the notion of embryos has been the creation of pre-embryos, symbolic in nature and linguistically justified in opposition to the law, which had the distinctive feature of not being subject to the same restrictions imposed by the law.

In the months before the enactment of Law 40, the Italian public debate turned to the issue of the “beginning of life” as the new main ethical and moral issue. The debate, moreover, was framed as a controversy promoting two adverse factions: the so-called “pro-life” movement (summarized by the slogan “the embryo is one of us”) and those who did not accept the classification of an embryo as a person and wanted to put the rights of the mother before those of the unborn child.

These positions brought different legal and technical decisions, particularly regarding the possibility of freezing surplus embryos: the first group clearly rejected embryo cryopreservation in order to defend human life; on the contrary, the second group was in favour of embryo freezing, seeing it as a valuable tool to limit the negative effects of repeated hormonal treatments and surgery for oocyte collection. As we have seen, the position that prevailed in Italy (until the intervention of the Constitutional Court in 2009) was that of the pro-life movement.

In the first months after the enactment of the law, to avoid these restrictions operators of the reproduction centres, and their professional associations, questioned the term embryo used in the law: when can a fertilized oocyte be considered an embryo, therefore constituting the beginning of human life and a person? Some scientists proposed a technical distinction between embryo and pre-embryo on the basis of a medical interpretation of the law, which enabled them to circumvent its provisions. According to this interpretation, as a zygote the embryo should be a cell with a single nucleus (of 46 chromosomes) in which the fusion between the male and female gametes had already taken place, usually 36 hours after the moment when the oocyte and the spermatozoon come into contact. Otherwise, an oocyte fertilized less than 36 hours previously should be considered a “pre-embryo” (or “pre-zygote”).

The strategy of differentiation between embryo and pre-embryo – in use in countries like Germany and Switzerland – had a technical basis: pre-embryos had almost the same rate of survival as embryos, while freezing oocytes (the only other option available to avoid wasting biological material from female patients in each treatment) at the time had a very low rate of survival after thawing. However, the notion of pre-embryos assumed fundamental significance in the Italian bioethical debate on the question of life, and the various stages of embryo development have been used in the public debate to “establish” when life begins.

The overlapping of biomedical and moral/ethical meaning produced the failure of this strategy (for a deeper discussion see Perrotta 2011). The pre-embryo became an example of how even in the bio-medical community the moral and ethical categories were dominant in the reproductive discourse. The bio-medical community was not rejecting the equation be-

tween embryo and human life itself, but trying to negotiate the postponement of the beginning of human life. This turn to the language of biology (that in other circumstances would be viewed as “the natural” language of ART) has been considered as a manipulatory attempt. The term embryo, in fact, was (and still is) widely used inside and outside of the scientific community, because it is considered a simpler and more comprehensible language in order to communicate with personnel external to the laboratory (doctors, nurses, anaesthetists, and so on) and with patients. The generic expressions “fertilized oocyte” and “embryo” are often used as commonplace terms, while biological nomenclature (zygote, blastomere, morula, blastocyst and so on) is often set aside in ART centres.

The attempt to negotiate the limitation imposed upon the medical practice by redefining the category of embryo was subsequently blocked by ministerial circulars and guidelines establishing that, although Italian law made reference only to embryos, the restrictions also applied to pre-embryos, since it had clearly been the intention of the legislators to protect potential “life” from its beginning: namely, the moment of encounter between oocyte and spermatozoon, seen as the beginning of an unstoppable process that would lead to the birth of a child.

4. Conclusions: Creating Human Life Itself

Through this introduction I have aimed at illustrating the process of bio-objectification of embryos, looking at the ecology of actions through which embryos are moving and which constantly renegotiate their meanings. These multiple translations, for partially planned but also fortuitous reasons, produce ontological shifts, crystallizing biological substances (the *in vivo embryo*) into a specific shape (the *embryo as the beginning of life* and as a *proto-person*) with a specific array of possible meanings (the protection of embryos, the donation of embryos for reproductive purposes, the sacrifice of embryos for research, to mention just a few). Sarah Franklin (2000) explored the emergence of the concept of “life itself”. Here, I tried to illustrate how ART in the Italian setting has taken an active role in the sociomaterial construction of *embryo as human life itself*. The excursus of examples I have presented in the last few pages had the purpose of exploring how the ontological shift from *in vivo embryo* to *embryo as human life itself* emerged from the entanglement of State, Science and Religion, in which ART is embedded.

The Italian regulation of ART, whose main aim seems to be protecting the embryo, can be read as the effect of the alignment of powerful actors like Catholic hierarchies and the Conservative front, which built a moral monopoly around these issues. I proposed here a framework that is able to take into account a more complex ecology of actions, including those of dissident actors – who actively participate in the different ontological

shifts. My purpose was to show how the myth of the “creation of life in the lab”, which is based on the equation between embryos and human life itself, is partly supported in the ART centres for organizational reasons. The production of embryos in the labs, their conceptualization as the end of treatment and the beginning of a possible pregnancy, which translate the presence of embryos into the core element of hope, participate in the socio-material construction of the equivalence between embryos and human life. Moreover, I have analysed how the medical conceptualization of embryos is highly dominated by moral and ethical categories, even when the equivalence between embryos and life is discursively denied. The use of categories of non-embryos to sidestep the moral status of embryos unintentionally and unwittingly reinforces the overlap between embryos and human life itself.

The contributions to this special issue further articulate this overlap.

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