

Framing Embryos, Building Biological Citizenship: The Case of Preimplantation Genetic Diagnosis in Italy

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Abstract

Italian legislation on preimplantation genetic disease (PGD) provides a very interesting case of the different meanings attached to the rising and delicate sector of *reprogenetics*. Before and after the debate of the law 40, one of the strictest on assisted reproductive technologies (ARTs), PGD was a crucial topic of political debate, which is reconstructed by a review of the regulatory frameworks and the media. In the press, pro-life activists showed off PGD as an exemplification of the degeneration triggered by biomedical innovation, whereas pro-choice movements argued that it was a form of healthcare progress. Despite their opposition, all these positions seem to share a common vision consisting in disentangling embryo from the female body. By contrast, personal stories that increasingly emerged on the internet by people affected by a genetic disease insisted in associating PGD with a reflection on the lived experience of certain diseases and reproductive choices.

Introduction: the new reproductive technologies dilemma

The development of new reproductive technologies (NRTs) seems to be shaped by two opposing forces. On one hand, the proliferation of practices and technologies has radically changed the experience, meaning, and representations of pregnancy. On the other, each new development has brought up not only new political and moral issues, but has also reopened old debates which seemed settled. These ever-recurring historical cycles of assisted reproductive technologies (ARTs) are founded on a social construction process that calls the status of fetus and embryo, and accordingly, woman into question.

To put it briefly, procreation is one of the key terrains where patriarchal domination has gained power over women. By deploying rhetoric

based on the fecundity, wealth, and strength of the nation, reproduction has been placed at the center of the public sphere as a matter of general interest. As the feminist critique has shown, what has been presented as an apparently neutral space is in fact a strongly biopolitically connoted strategy, through which the female body has been dissolved and assimilated into the collective, political body (see e.g. Lacey 1998).

From this point of view, medicalization of pregnancy may be considered an extension of patriarchy by other means. As a matter of fact, new reproductive technologies (NRTs) have engendered a process of biomedical objectification of the first stages of organic development, first the fetus and then the embryo, which in turn has promoted its subjectivation. This 'ontological shifting' (Thompson 2005) is inherent in many biomedical practices. Ultrasound scans are a typical example of how contemporary biomedical visualization techniques can re-invent bodily boundaries in time and space, making the body transparent (van Dijk 2005), and so turning its interior into a surface (Taylor 2005). In the case of prenatal medicine, the ultrasound is usually experienced as an *iconic birth*, where the 'baby's first pictures' (Mitchell 2001) are used to advance the date of the ritual introduction of a new member into the family and society. To some extent, the fetus is discussed in terms of patienthood, and, accordingly, of personhood. This situation is particularly clear in the case of the clinical units of 'fetal medicine' which treat an increasing number of fetal diagnoses, leading either to fetal surgery or to neonatal treatment (Casper 1998; Williams 2005). Analogous processes can also be found in reproductive clinics. Articulated around the 'production' of embryos and the beginning of pregnancy, the organization of ARTs themselves participates in the socio-material construction of the equation between embryos and human life (Perrotta 2013).

However, the spread and advancement of NRTs tend not only to reconfigure fetal status as that of fully-fledged human individuals endowed with life and agency, but have also been creatively aided by advances in women's freedom of choice regarding their own body and pregnancy. The same evolution of these techniques has configured new legal and medical responsibilities of women, which is particularly clear in the domain of reproductive genetic practices.

Prenatal diagnosis was developed at the same time as the major legal and cultural changes that occurred between the 1960s and the 1970s—notably the feminist movement critique regarding reproductive control and the legalization of abortion in most European countries (with a few exceptions like Ireland). I do not intend here to indulge the old idea of ‘the West’ as the vector of technological and political progress, such as the political right of women to have access to NRTs and abortion. As a matter of fact, the first country to legalize the voluntary interruption of pregnancy was Russia in 1920. However, in most Western countries we found a unique interaction between the development of these biomedical technologies that control pregnancy, and the feminist claim regarding abortion rights, which was usually approved of by a legislator in the case of fetal malformations. That situation does not concern exclusively the juridical realm. From a cultural point of view, prenatal screening tests and prenatal diagnosis are typical examples of situations in which women act as ‘moral pioneers’ who explore the new ethical space of action regarding the possibility to abort after the genetic analysis of the fetus (Rapp 1999).

At the same time, the development and spread of ARTs have ended up promoting the personhood of the embryo. In some cases, these technologies have revived the debate around firmly established medical practices such as the voluntary interruption of pregnancy, which is under attack by several political, social, and religious movements today. This is what seems to have happened in Italy, which, after initially refraining from drafting legislation on ARTs, approved one of the world’s most restrictive laws, as far as reproductive medicine is concerned, in February 2004. The lawyer and historian Patrick Hanafin interprets this event as a wide, dramatic transformation of a society that, after ‘having slowly and painfully moved away from dominant heteropatriarchal conception of family relations in the 1970s, succeeded in introducing a law in 2004 which gave symbolic recognition to the human embryo and greatly restricted access to assisted reproductive services’ (Hanafin 2007, 2).

The crooked trajectory of PGD

This paper intends to contribute to this line of research by focusing on the role that Preimplantation Genetic Diagnosis (PGD) has played in public opinion. Even if babies born following PGD are few compared to the babies born through regular in-vitro fertilization (IVF), this procedure has been one of the most controversial aspects of ARTs, even outside of Italy. Developed on the most advanced IVF techniques, PGD is used to provide a genetic analysis of embryos prior to implantation in the womb. In other terms, it is the most sophisticated example of *reprogenetics*, i.e. the application of genetic technologies in reproductive medicine applied to the selection of human beings. Introduced in 1990 as an experimental procedure to provide couples who are 'at genetic risk' (are either affected or healthy carriers) the possibility to have children without their genetic diseases, PGD has been developed into a commonly used technique aimed not only at avoiding the transmission of hereditary diseases, but also to increase the success rate of IVF.

These issues make PGD one of the IVF techniques that has most developed along a crooked path. In their seminal ethnography of PGD, Sarah Franklin and Celia Roberts (2006) show the crucial and at once ambivalent role played by PGD in the process of the establishment of ARTs in the United Kingdom. PGD 'was hailed as "winning the vote" in a decisive victory that enabled passage of the first comprehensive legislation governing new reproductive and genetic technologies in 1990' (39), namely the Human Fertilization and Embryology Act. However, ten years later, in a period marked by a wave of public hostility toward biotechnological research, PGD became the target of political attacks against the manipulation of human (and not only) life with the extension of PGD to the first cases of 'savior siblings' (63). The iconic image of the 'designer baby' with which PGD was associated heightened the sense of artificiality and manipulability of life inherent in the older symbolic image of the 'test-tube baby'. Intellectuals in Europe and the United States dedicated entire books to denouncing the risk of entering a 'brave new world', where genetic enhancement would create the possibility to have made-to-order offspring (Fukuyama 2002; Habermas 2003).

Ironically, what happened in Italy was the opposite. If at the beginning of the debate on the regulation of IVF techniques, PGD was considered one of the scariest manipulations of human life, it ended up being a Trojan Horse for the deconstruction of the Assisted Reproduction Act both legally and culturally. In this paper I propose to analyze the interactions among representations, regulatory changes, political actions, and medical practice from 2000 to 2013, during which PGD has shifted from being seen as one of the most monstrous manipulations of life to a new right claimed as part of a rising 'biological citizenship' project (Novas and Rose 2005; Rose 2007).

The empirical materials studied here come from several sources and methods: *first*, regulatory documents, including the Minister guidelines and over thirty legal sentences; *second*, articles from large-distribution Italian newspapers and journals which are deemed 'quality press' (*La Repubblica*, *Corriere della Sera*, and *L'Espresso*) from 1999 to 2013; *third*, websites of and bulletins from the two most important associations involved in the debate that represent different positions (*Associazione Luca Coscioni and Movimento Scienza & Vita*); *fourth*, personal stories told directly by people affected by genetic disease who claimed the right to this treatment in Italy, and published on the internet by politically engaged journalists and associations. The different frames in which PGD has been represented provide a valuable window for analyzing the public representations of embryos. After a paragraph on the legal trajectory of PGD in Italy from 2000 to 2013, I will demonstrate how the embryo has been publicly 'framed' in two different situations: the public debate regarding the approval of the 2005 reproductive law 40 and the following referendum to repeal it; the stories of couples who, as carriers of genetic disease, have shifted the struggle of PGD rights from ballot boxes to courtrooms.

PGD in Italian law and politics

In February 2004, the Italian Parliament approved one of strictest laws in the world on ART. According to this law, only legally married heterosexual couples could have access to IVE, and donor insemination, sur-

rogacy, and the freezing of embryos were forbidden. PGD was not mentioned directly, but it was rendered technically impossible due to other provisions, which stipulate that no more than three embryos may be created, and that all of them *have* to be transferred into the uterus (Flamigni and Mori 2005). At the same time, in the ten-year debate that lead up to the law, and even a few months after its approval, PGD seemed like a practice on which assisted reproduction could build a degree of freedom. In fact, this practice was intended to be one of the compromises of members of the Berlusconi government. The majority wanted to reconcile the demands of the Catholic Church concerning the protection of the embryo and the interests and freedom of reproductive clinics, then, as now, well developed in Italy. The strategy was supposed to be based on the so-called '*passarelle*', i.e. bans without effective measures to be taken in case of violation. The final wording of the law, on the contrary, poses many particularly severe limitations and explicit condemnations.

The reaction of the patient associations, many gynecologists, and leftist associations and political parties was immediate, and within a few months a committee was formed that proposed several abrogative referenda for the law. PGD immediately played a crucial role in this political escalation. In May 2004, the Court of Catania confirmed the ban contained in law 40 with a sentence which gave 'a strict and literal interpretation of the new law, driven by a misconception that use of [PGD] is disguised eugenics, because a child can never be better off by not being born' (Fenton 2006, 103).

The publication of the guidelines from the Minister of Health (a passage required by the law itself in order to be implemented) provided an opportunity to lighten the conflict generated by the approval of this act, and so, to avoid the referendum threatened by opponents. Mediation could have been found precisely in PGD, which certain authoritative figures were open to, such as Antonio Tomassin (then President of the Health Committee and member of Forza Italia), and even within the fiercer component of the political majority, the Union of the Centre (UDC), a Catholic political party. Yet, on July 22nd, the guidelines gave a restrictive interpretation of law 40, and in particular, unequivocally banned PGD, defining it as a form of eugenics.

The 2005 referendum saw a sound political defeat of pro-choice activists, due to the aggressive intervention of the Catholic Church in national politics, imploring its constituents not to vote (a referendum requires 51 percent of the population to vote in order to be valid). Instead, a new political strategy based on court cases was successful in creating a gradual judicial reworking of the Assisted Reproduction Act (law 40), which gave prominence to childless couples and those with transmissible genetic diseases. This is evidenced in a headline from the left-wing newspaper *l'Unità* the day after an important ruling on IVF rights in 2012: 'Preimplantation diagnosis: the law 40 is in shreds (*PGD: la legge 40 è a pezzi*)' (Bufalini 2012).

There were two decisive verdicts in this regard. The Regional Administrative Court of Lazio (*Tribunale Amministrativo Regionale*) in January 2008 declared the Ministry guidelines '*ultra vires*' (too stringent). A year later, the Constitutional Court (Corte Costituzionale, Sentence n. 151, April 2009) declared that both the limitation regarding the maximum number of embryos to be produced, and the mandatory transfer of all produced embryos, were at odds with several constitutional principles. Couples seeking to utilize PGD promoted both of these issues.

In reality, following the 2009 ruling there are still two strong limitations of PGD. First, only sterile couples technically have the right to utilize it. However, this limit is overcome practically by the couple's statement that sexual intercourse has not resulted in pregnancy. The second, and more significant limit, is that National Health Service clinics continue to refuse to provide this treatment.¹ The right to easily accessible public PGD becomes a new struggle instigated by couples who insisted on it in an increasingly overt manner. PGD may therefore be seen as a Trojan horse, not only in the repeal of the Italian Assisted Reproduction Act (40/2004), but also in the emergence of innovative practices of citizenship. The rest of this paper will explore these political dynamics by means of a double movement of *disentanglement* and *reentanglement* of the embryo from the female pregnant body. Put at the center of the public opinion as a new subject in need of protection, the embryo is seen not only as a subject endowed with right, but also as an autonomous individual.

Disentangling embryos: PGD as a type of eugenics or biomedicalization

The ban of PGD created a huge scandal, which can only be understood through political maneuvers developed within a movement formed by certain center-right political parties, a number of associations, and particularly, the Vatican hierarchy of the Catholic Church. In a campaign oriented to assert the status of the embryo as a person, PGD was depicted as an updated and liberal version of eugenics. According to this view, satisfying the consumer desire of a perfect child would pave the way to the dangerous myth of a biological purity, and to the battle against any deviation from the norm. The threat of a Nazi regression towards a perfect race was thrown around on several occasions, especially in the tense atmosphere aroused by the law. Even the moderate and institutional figure Girolamo Sirchia (then Minister of Public Healthcare) declared during an interview (De Bac 2004), 'Assisted reproduction techniques should not be aimed at selecting our species, but at intervening when nature fails. [...] If we accept [PGD], we will soon select babies with blue eyes and blond hair, and that would set us back fifty years.'

The reference to 'fifty years ago' is either a historical or mathematical mistake. The Minister does not seem to refer to the fifties, but to Nazi Germany in the thirties. A similar argument, although more brutal, was used by a local section of the UDC, swayed by the influential politician and MP Carlo Giovanardi. They plastered several cities of the region of Modena with a poster-campaign depicting a Brown Shirt (SA) gathering headed by Hitler with the slogan: 'If they [the Nazis] had been here, they would have signed [*the referenda*]' (see fig. 1). An equally brutal accusation was made during a television broadcast (Ballarò, May 31, 2005), where the Minister La Loggia refers to prenatal diagnosis, stating, 'Not even Mengele² would have dreamed of it.'

The reference to eugenics gradually lost all reference to the Nazi era. PGD rather became part of a health-craze willing to sacrifice the rights of sick people to exist on the altar of medical progress. The journalist Giuliano Ferrara, during a procession against the referendum organized by the '*Politica per la vita*' (Politics for Life) movement, uses himself as

an example, stating: 'I have paroxysmal atrial fibrillation, a predisposition for obesity, a hint of diabetes [...]. [If] in 1952 they had performed pre-implantation diagnosis on my embryo they would have cancelled me' (Ferrara in Cazzullo 2005).

Figure 1. Political poster of the campaign against the collection of signatures for the referendum to repeal law 40



Source: «Gazzetta di Modena», June 11, 2013.

In this more moderate guise, this position is taken on not only by several prominent institutional figures such as the governor of Lombardy, Roberto Formigoni, and the president of Catholic Medical Association, Vincenzo Saraceni, but also by certain leftist politicians, such as Roberto Fioroni, who refers to 'eugenics selection' (Verderami 2005). As part of a broader reflection, the embryo became the emblem of commercial biomedical re-

search which aims to fulfill people's desires—technologically advanced yet devoid of a solid moral reflection on the essence of human nature. Here we enter into a wider conceptual frame that is partly shared by both leftist media and politics, and is suspicious of the risks of 'biomedicalization', i.e. the extension and reconstitution of medical jurisdiction, authority, and practice to areas of life that were previously considered social or juridical, promoted by technoscientific innovations (Clarke et al. 2010). PGD comes to be represented as a grueling battle against the pathological, which would have the effect of introducing an even more rigid concept of normality for mankind. The following vignette sums up this position well.

Figure 2. Stamy: 'Keep it up, and the poor embryos will also learn about cosmetic surgery after genetic selection'



Source: *Avvenire*, an Italian newspaper affiliated with the Roman Catholic Church.

Disentangling embryos: PGD as a source and symbol of biomedical research

PGD also emerges as a symbol of ‘bad’ biomedical research that treats rare diseases in a hasty, superficial, and amoral manner, preventing the development of ‘good’ research. A poster from Science and Life (*Scienza e Vita*—the anti-referendum committee set up by the Catholic Church) is particularly telling. In it, PGD is placed in opposition to ‘a science that is aimed at the well-being of every single person, [...] in the research on so-called rare diseases.’ The pro-life movement responds to criticism of being ‘obscurantist’ by advocating a type of scientific research that incorporates equal rights. This option seems to be answered through the discovery and development of a proven technology in the first half of the nineties that was later basically abandoned—‘Preconception genetic diagnosis’—which analyzes the eggs rather than embryos. A true case of the ‘incorporation’ of specific moral values in a technique, this technique is not practiced only in Italy (particularly in the *Laboratorio Genoma* of Rome), but also in Germany, where there are similar legal restrictions.

A common feature runs through these same discourses. IVF embryos are conceived as human subjects—‘one of us’, to use the expression of a famous pro-life slogan. Their autonomy is envisioned in their vulnerability as subjects without means to speak for their rights on their own behalf. The presence of fetuses on pro-life posters, as well as the creation of small cemeteries for fetuses are indications that point in this direction. Again PGD appears to have an exemplary value, and not coincidentally, a prominent professor of philosophy of law compares this technique to a violation of the embryo’s privacy (Sartori 2006).

Instead, the tendency to think of the embryo itself as an entity detached from reproduction is adopted in a different manner by those who claim the freedom to use them for biomedical research. The already acquired right of abortion is neither discussed nor defended, but recognized (even though still formally tied to the permission of a physician) as a choice entirely belonging to the woman.

On another level individuals such as Luca Coscioni, president of the Luca Coscioni Association, raise the issue of biomedical research, criticizing

law 40 as an act that ignores patients like him who, suffering from degenerative diseases, may only hope to be cured by new treatments from regenerative medicine that are based on embryonic stem cells (ADUC 2004). PGD lends itself so well to this discourse that it is even associated with genetic engineering by an authoritative exponent of the scientific world, the Nobel Prize winner Rita Levi Montalcini, who fought vigorously against law 40:

Genetic engineering promises a better future for human beings: from the production of new drugs to uterine pre-implantation diagnoses of the embryo and the elimination of genetic defects, to the improvement of the quantity and quality of food production (Levi Montalcini 2005).

Re-entangling embryos through emerging practices of citizenship

Given the political defeat of the referendums, an active political resistance made up of legal contestation has arisen to restore reproductive citizenship to those deprived of it (Hanafin 2013). The battle for PGD launched an awareness that did not end with the legal recognition that took place in 2009. Instead, couples affected by, or carriers of, genetic disease have continued the active struggle for the right to PGD, as well as to end the stigma around this practice, and more generally, these diseases. In this case, the strategy stressed the uniqueness of individual cases. The political struggle went to the bar thanks to the legal support coming from both political associations like Luca Coscioni, and patient associations like *Madre Provetta* (Mother Test-Tube). The prohibition of PGD was ironic and contradictory in the face of the freedom to abort a 'healthy' fetus, as it implied a greater protection to the early stages of conception. This contradiction has been applied in practice, resulting not only in juridical victories, but also in new and effective political practices. Hence, in Ingrid Metzler's words, 'whilst in Parliamentary debates, embryos dwelling in laboratories had been disentangled from foetuses developing in their mother's wombs, in Italian courtrooms, IVF embryos were re-entangled with embodied foetuses' (2012, 160–161).

It would be wrong, in any case, to limit the consideration of the impact of these battles to their legal value. The most interesting elements emerged on the internet, with stories of people affected with or being a carrier of a genetic disease sharing their lived experience through reflection about reproduction as a genetic patient. These stories speak of couples and families during hormonal treatments, traveling to foreign countries, and making economic sacrifices³ pursuing the final goal to have a child. All of them pursue a clear political claim: the right to access PGD, in some access through the Italian public National Health Service.

In the Italian political scene, these actions fall in a dimension that emerges in the second half of the nineties, and which we can define through the category of 'biological citizenship' (Novas and Rose 2005; Rose 2007). The demand for the right to protect the biological vulnerability of one's offspring and, therefore, treatment that could protect them from unnecessary suffering, became the center of these battles. A framing of this practice as a way to save children from suffering already experienced first hand in the family emerges from the stories in the press, personal testimonies on the internet, and interviews with couples who intend to use or have already used PGD. The selection of embryos therefore falls within a more complex family project. 'I want my child to be able to run,' says Davide Sbarbaro in a video interview posted on the website of Radio Cento Passi (see fig. 3).

Figure 3. David Sbarbaro tells his story of living with hereditary multiple exostoses to journalist Monica Soldano.



(<http://www.youtube.com/watch?v=cUD990jdtQk&feature=share>).

The stories of families like these, shared through interviews, became a very effective narrative device that was widely adopted even by the mainstream press. Even in the most controversial cases in which the genetic selection of the embryo is aimed at giving birth to a child who is 'biologically compatible' to a brother who suffers from a serious childhood disease such as leukemia (yet not affected), the media exalts the dramatic value of these stories.

Apart from the excesses of sensationalism to which journalists tend to indulge, we see a radical discursive shift from a debate centered on the embryo and the biomedical progress, to another completely different one based in the socialization of the issues and opportunities brought about by biomedical innovation. Despite being based on personal stories, only a superficial analysis may discard them as purely individualistic. They are, on the contrary, very socially informed. From a practical point of view, the lawsuits were immediately encouraged and supported in most cases, even economically, by pro-choice groups. From a subtler perspective, this innovative move created occasions for speaking about rare diseases that usually lack public attention.

The determination of Davide Sbarbaro in rejecting the usual cover of anonymity is obviously the sign of a change that goes beyond the halls of Justice. The break with anonymity, behind which most of the couples had previously hid, should not be considered only in relation to its consequences in terms of public opinion. We also find important emotional, legal, and medical consequences in these trajectories of the socialization of disease, or, to borrow a concept from Paul Rabinow (1996), these new forms of 'biosociality' created around the categories of physical vulnerability, suffering, and genetic risk.

As seen in the conducted interviews, these experiences seem to produce important changes for the groups of patients suffering from genetic diseases in terms of reproductive options allowed by technological innovations in the field of reproductives. These people obtain knowledge and experience that does not simply pertain to their disease, but rather to a new kind of relationship with technology and research—one of the central issues of biosocial subjectivity (Gibbons and Novas 2008). It is not technical information in as much as an often unexplored dimension of the disease

in which biomedical options cross the temporality of genetic disease, reproductive choices, and more generally, life trajectories. PGD forces a reassessment of the genetic disease that is not abstract, but rather situated in a complex relationship that cannot be fully addressed in this essay.

Conclusions: reprogenetics, biocitizenship and biosociality

The Assisted Reproduction Act n. 40/2004 radically reversed the previous deregulated period for ART in Italy. In few European countries was reproductive health tied to such strict rules as in Italy. This political shock contributed to the surfacing of new practices linked to a new citizenship project, biological citizenship, within which the old issue of abortion has been reframed.

By virtue of its close relationship to genetics, PGD became a critical terrain of political confrontation, in which different conceptions of life are measured in relation to techno-scientific development in the biomedical field. Despite their great diversity, the pro and con discursive frames appear to be based on the rejection of instruments intended to govern life from above. Even in its most brutal expression, such as in the Nazi metaphor, we witness the desire to escape a biological homologation process imposed not just by the State, but also by new subtler and still more pervasive cultural ideas of health. The most sophisticated critics of PGD threaten with a specter of a science that by relying on individual desires to perfect health constructs an even more authoritarian normalization process, and therefore, of the degeneration of the human species. Of course this refers to a 'negative bio-citizenship' aimed at prohibition. It should also be pointed out that while the threat of normalization promoted by the development of biomedicine is used rhetorically, on a practical level it affects only minority subjects such as gay couples, or in the case of PGD, fertile couples at risk of transmitting a genetic disease.

Important political reactions were also raised on the opposite side. The critique of the Assisted Reproduction Act, the day after its approval, grew into a mass movement with important public protests. In political

debate, however, most of the frames that are used are based, with an attitude of disbelief, on the arguments used in the battle for abortion rights, revolving around female body self-determination rights. Another recurrent frame, which is partly shared by both sides, concerns the relationship between PGD and biomedical research, and includes a wide set of approaches, from the stigmatization of the research performed at any cost and without moral restraint, to a rather abstract defense of scientific freedom.

What marked a difference were the appearing of personal stories of people who, being affected by a genetic disease, claimed the right to utilize PGD. These couples' stories are marked by genetic disease at the individual and/or familial level, acquiring significant substance with which to move public opinion and beyond. Published mostly on the internet, these stories were then presented even in the press. The personal and/or familial experience of disease acquires public significance and is shared by different levels, from families and patient associations to public opinion. I define these bio-political practices as forms of active citizenship, proposed by those seeking to gain rights by utilizing their own concrete experience. This battle is focused on the specificity of subjects, including couples and more or less extended families, patient associations, and so on, and their difference with those who have easier or healthier lives. A political battle revolves around these forms of biosociality that is both legally and socio-culturally important. These new political practices and subjectivities encourage us to rethink the concept of autonomy of the embryo, the fetus, as well as human individuals.

Notes

- ¹ This article was written in 2014 and does not take into consideration the subsequent evolution of the law.
- ² Mengele was a medical officer assigned to Auschwitz concentration camp during World War II, notorious for his deadly experiments on prisoners inspired by eugenics.
- ³ A single treatment can cost several thousand Euro, and often a patient requires several, without a guarantee of success.

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