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Transforming social contracts: the social and cultural history of IVF in Denmark

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Abstract The introduction of IVF in Denmark was accompanied by social transformations: contestations of medical authority, negotiations of who might access reproductive biomedicine and changes in individual and social identity due to reproductive technologies. Looking at the making of Danish IVF, this article sketches its social and cultural history by revisiting the legal, medical, technological and social developments that characterized the introduction of IVF in Denmark as well as by contextualizing the social research on the uses and impacts of IVF carried out in the 1980s and 1990s within these developments. The making of Danish IVF is presented as a transformative event in so far as it changed Denmark from being a society concerned about the social consequences of reproductive technologies to a moral collective characterized by a joined sense of responsibility for Denmark's procreative future. 

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Introduction

Denmark's equivalent to Louise Brown – Troels Renard Østbjerg, the first Danish IVF baby – was born in 1983. This event took place as Danish society was remaking itself through a transformation of some of the central dimensions of its underlying social contract. The advent of IVF involved a renegotiation of the role of institutionalized medicine and of the welfare state in the making of subjects and citizens, as well as a sense of collectivity around Denmark's procreative future. This process was characterized by at least three dynamics: debates on medical authority, negotiations over who might access reproductive biomedicine and changes in individual and social identity due to the expanding use of reproductive technologies. These dynamics shaped how IVF came to be interpreted and made meaningful in Denmark, while the advent of IVF simultaneously shaped how these dynamics played out.

In this article, we want to revisit the making of Danish IVF in light of these transformative events. With the point of departure in, on the one side, the historical developments that led to IVF becoming a legitimate part of contemporary Danish society, and on the other, some of the central social science research on the uses of IVF in Denmark during the 1980s and 1990s, we want to sketch the social and cultural history of IVF in Denmark. Despite the success of IVF, accounts of its role as a 'substance for social relations' (Franklin, 2006a, 2006b), and as a technology of social contract in contemporary Danish sociality, have yet to be written.

We will begin by giving a short overview of the use and practice of IVF in contemporary Denmark. We will then attend to the three transformative dynamics mentioned above: questions of (i) medical authority; (ii) access to reproductive biomedicine; and (iii) individual and social identities in relation to IVF. Looking at each of these dynamics, we will tell three interconnected stories of the social and cultural history of Danish IVF. Rather than being comprehensive and conclusive, these stories are particular and situated (Haraway, 1988), drawing their strengths from a specific interest in how IVF became a legitimate and integral part of Denmark's social fabric. Thus, rather than regarding IVF as a technology aimed solely at helping the childless, as medical professionals might frame it, we understand IVF as a technology that needs to be made meaningful by those who administer, regulate and use it in order to be accepted and made legitimate. IVF is about more than having children. As we will argue throughout, the making of Danish IVF joined Danish citizens in the pursuit of procreative futures and gradually extended the group of people given access to infertility treatment. At the same time, the introduction and use of IVF, as well as the debates around it, enabled individuals to lay claim to access to reproductive technologies as part of their status as citizens of the Danish state. It is in this sense of opening up a 'space of possibility' – in which relations between the state, its institutions, and its citizens can be negotiated – that IVF as a technology of social contract might be understood.

Contemporary Danish IVF

A total of 12,328 treatment cycles of IVF/intracytoplasmic sperm injection (ICSI) were carried out in Denmark in 2015,

making it one of the leading countries using IVF in terms of cycles per capita, percentage of children born per year following IVF treatment and, not least, success rates (Dansk Fertilitetsselskab, 2016; Kupka et al., 2014). In 2014, 2024 children were born following the use of IVF/ICSI, totalling around 4.8% of all children born that year in Denmark and about 45% of all children born that year using fertility treatments (Sundhedsdatastyrelsen, 2015). IVF treatments are covered by the tax-financed Danish public health service for all involuntarily childless women residing in Denmark up to the age of 40, though the current consolidation act on assisted reproduction forbids fertility treatment for women older than 45 (Folketinget, 2015). The sheer number of children being born following the use of reproductive technologies every year, around 8%, in a country of only five and half million people makes it almost impossible for someone in Denmark not to know a person either born following, or having undergone, fertility treatment. In other words, IVF has become part of everyday life in Denmark in the sense that it helps to build families whose mode of creation and existence is rarely questioned by either political or media representatives. The Danish public health service's provision of three cycles of IVF and additional insemination procedures underscores this point further, because it demonstrates as a matter of course that the Danish people expect the state and society to take responsibility for both individual and collective reproductive futures.

Another notable feature of the acceptance of IVF in Denmark is the inclusive nature of the current legislative framework. In granting access to IVF for all women regardless of their marital status and sexual self-identification, Denmark remade itself as an inclusive national collective as it emerged from the social and political struggles that will be revisited in the following sections. As attested by the political debates of the 1990s about access to IVF for lesbian and single women (Adrian, 2006; Albæk, 2003; Bryld, 2001; Larsen, 2015; Petersen, 2009; Stormhøj, 2002), these struggles tended to focus on social intervention in traditional kinship (understood as kinship resulting from a heterosexual partnership and nuclear family model) enabled through reproductive donation, rather than on problematizing the technological interventions in procreation afforded by IVF. Thus, as will become clear, the social and cultural history of Danish IVF is tied inseparably to the legitimacy of donor insemination in as far as the potential to disrupt traditional kinship was a key element of how IVF was made meaningful. Treatments such as a combination of IVF and donor insemination or IVF treatments for lesbian and single women, which were seen as potentially quite disruptive of traditional family arrangements when IVF was first introduced, later came to be regarded as an accepted part of Danish citizens' equal access to procreative technologies. This development toward inclusion notwithstanding, the legal regulation of IVF in Denmark also insists on an evaluation by a medical expert of whether the person undergoing treatment will be able to provide the necessary care once a child is born (Folketinget, 2015). Should the expert be in doubt about this, she/he is asked to report to the Danish state administration (which has the authority to determine whether or not someone may receive fertility treatment), or to deny treatment if the patients do not consent to their case being reported. Official numbers on instances in which fertility treatment is denied

are not available. However, an inquiry to the Danish state authority revealed that some of the main reasons for denying fertility treatment are physical and/or mental handicap, a history of substance abuse and/or a history of failing in one's duty to care for a child.

Part of the inclusive dynamic that characterizes the contemporary use of IVF in Denmark is the legal sanctioning of egg donation in 2006, after a prolonged debate. Yet whereas sperm donation is a highly routinized and commercialized business in Denmark, the commercial viability and routine practice of egg donation is far from being a reality. In 2015, only 233 cycles of egg donation were registered (*Dansk Fertilitetselskab, 2016*). Problematizations of egg donation in public discussions and regulatory statutes seem to focus overwhelmingly on issues of commercialization. This is apparent in how Denmark regulates egg donation: the current consolidation act on assisted reproduction forbids the sale or participation in the selling of human egg cells (*Folketinget, 2015*), in line with a binding directive by the European Union which only allows non-commercial reproductive donation. While a compensation of up to 7000 Danish crowns (DKK) – around 940 Euro (€) – per egg donation might be considered to be a first step to commercialization by some, introducing this legally capped limit during the last legal change in 2016 was positioned as a measure to prevent commercialization of egg donation. Thus while compensation is considered legitimate for sperm donation, and a commercial approach to sperm donation is a de-facto characteristic in Denmark, in regard to egg donation it is not. This suggests that the legislative regulation of reproductive donation in Denmark is gendered, in the sense that women's reproductive cells are positioned as unavailable for commercialization whereas men's cells are not (cf. *Almeling, 2011*). Because of the current status of egg donation in Denmark, Danish women wanting to use donated egg cells have to go abroad (*Kroløkke, 2014a, 2014b*).

The extent to which IVF and reproductive donation have become commercialized in Denmark is reflected in the annual revenue of fertility clinics and sperm banks. Denmark has 21 registered fertility clinics, of which nine are publicly funded and twelve are run privately (*Sundhedsdatastyrelsen, 2015*). Some of the private clinics are owned and run by physicians who are also employed in the public system. The cost for one treatment cycle of IVF at a public fertility clinic in Denmark is calculated to be about 3000 Euro, with comparable treatment at a private clinic costing 25% more (*Christiansen et al., 2014*). Private clinics account for about 52% of all IVF cycles. Of the four registered Danish sperm banks, three are privately owned businesses. Four of the six private fertility clinics located in Copenhagen had a combined gross profit (the difference between the revenue from sales and the costs of producing goods/services) of about 46 million DKK in 2013, amounting to about €6 million. The two largest Danish sperm banks had a gross profit of about 53 million DKK, which is about €7 million (*Proff.dk, 2014*).

This business is overwhelmingly an intra-European affair. In 2014, 19% of all Danish IVF/ICSI treatments involved women or couples not residing in Denmark, with most of these patients coming from Sweden, Germany, Norway, France and Great Britain (*Sundhedsdatastyrelsen, 2015*). In 2013, the last year with official statistics available for the export of Danish donor semen, the two sperm banks responsible for export delivered only about 4% of their

donor semen to countries outside the European Union (*Sundhedsstyrelsen, 2014*).

Surrogacy is currently banned in Denmark. While much of the debate around surrogacy focuses on commercialization (*Kroløkke and Pant, 2012*), as with egg donation, concern is also voiced about traditional kinship, as mentioned above. This is reflected in Danish law: egg donors are not recognized as mothers, while surrogates, on the other hand, are considered to be mothers in so far as they have given birth, no matter what the genetic connection between them and the newborn. Thus ethical arguments against the commercialization of surrogacy often also involve concerns about the kind of 'kinship trouble' (*Mohr, 2015*) that reproductive donation provokes, namely the disturbance of traditional kinship patterns. Due to the ban on surrogacy, Danes looking for a surrogate turn to other countries such as the USA and Mexico (*M N Petersen, forthcoming*). The most recent change (in 2014) of the Danish nationality law (*indfødsretsloven*), which automatically grants Danish citizenship to a child if the father, the mother or the co-mother is Danish, may represent the development of a more lenient attitude to surrogacy in Denmark. Whereas, for example, gay men previously faced legal and bureaucratic hurdles when attempting to acquire citizenship for their children born from a surrogate in a foreign country, these children now have the same rights as children of Danish parents born without surrogacy, underscoring once again how the Danish national collective has been remade under the umbrella of procreative futures (*Edelman, 2004*).

We will now turn to the three aforementioned interconnected stories about the making of Danish IVF. Firstly, we will look at how medicine's authority over reproduction was negotiated when IVF was introduced, then turning to questions of access to reproductive biomedicine and finally, engaging with IVF as part of subjectivation and socializing processes. These three dimensions of the social and cultural history of Danish IVF will highlight the role of IVF in transforming Danish society from one that is concerned about the social consequences of reproductive technologies to a moral collective characterized by a shared sense of responsibility for Denmark's procreative future. Simultaneously, these stories will also make clear how IVF was remade from a highly controversial treatment into a self-evident part of Denmark's collective reproductive endeavour.

The making of Danish IVF, part one: medical authority

The first story is about medicine's authority over reproduction. When the first Danish IVF baby was born in 1983 (cf. in Sweden in 1982 and in Norway in 1984), medicine's authority as the central reproductive institution was contested: how much autonomy might medicine assume in securing Danish citizens' reproductive health and well-being? Although Denmark has a history of regulating reproductive medicine and health services through specific laws, with the introduction of IVF it experienced a transformative period characterized by a pronounced mistrust in medical authority. Whereas previous legislative statutes had granted the medical profession a relatively high degree of autonomy, the first fertilization law of 1997 (*befrugtningsloven*) introduced

strict regulations aimed at controlling medicine's autonomy in relation to reproductive services.

However, there were political concerns about the use of donor insemination before the initiation of IVF trials in Denmark in the late 1970s following collaboration with British fertility experts (Koch and Hansen, 2007). In 1948, the Danish ministry of justice established a commission, which was to assess the need for special legislation in regard to artificial insemination (Justitsministeriet, 1953). As the commission's report highlighted, donor insemination was already relatively well established in the 1940s. Yet due to missing legislation, children born following donor insemination, sperm donors, and physicians performing inseminations were left legally vulnerable. While the commission was primarily concerned with legal issues of this type, its report is also characterized by an awareness of the role of the medical establishment in making donor insemination a legitimate procedure, a concern which would also be central in later debates about IVF. To this end, the report points to the likelihood that the Danish population would regard donor insemination as illegitimate in the absence of regulation of the medical authorities involved. The commission's suggestion of limiting the right to inseminate to a few selected gynaecologists and establishing a treatment register with the Danish health authority can be understood as an attempt at legitimation by establishing state control over medical reproductive practices.

However, no law was ever passed. Thus, when the first Danish sperm bank was founded in 1967 at Frederiksberg Hospital, following experiments with freezing human semen during the 1950s, medical experts still acted in a legally unregulated space consisting only of agreed best practices within the medical community. An ethical committee system administered by the medical community itself was introduced only in 1979, following the Helsinki guidelines. Accounts by Danish fertility experts who were involved in administering donor insemination during the 1960s and 1970s reflect the medical community's interest in legitimizing donor insemination (Detlefsen and Starup, 1977; Jaszczak et al., 1974; Lebech, 1974, 1980; Lebech and Detlefsen, 1980; Nielsen et al., 1978). In these accounts, it was presented as a standardized and medically authorized procedure. Simultaneously, these accounts also hint at the social problematic of introducing a medically assisted intervention in traditional kinship. Legitimizing this kind of intervention required not just a standardization of working procedures and clinical protocols, but also a unanimous pledge by the medical community to protect the heterosexual couple's authority as parents. Thus, enforcing complete anonymity and barring single women as recipients of donor semen legitimized donor insemination as a medical and social practice at this point in time. Assuring that donor insemination would only occur within a nuclear family setting guaranteed its moral and ethical permissibility. Positioning donor insemination as an intervention that subscribed to the traditional kinship model, rather than disturbing it, thus secured medical authority over its administration.

Similar dynamics characterized the introduction of IVF. It was presented as a medico-technological solution to childlessness that would not disrupt traditional kinship patterns: single women were excluded from treatment, thereby countering fears that medicine might pave the way to fatherless procreation, and the combination of donor semen and IVF was not permitted, thereby assuring that traditional kinship patterns would remain in place. Thus, when IVF was introduced,

the medical community followed a similar course of action as earlier with donor insemination. At the outset, medical experts did not regard IVF as a major social intervention, since, according to their own guidelines, it was taking place only within heterosexual coupledness. Yet whereas this logic had proved successful earlier in regard to donor insemination, with IVF it did not. While doctors regarded IVF as a medical solution for a medical problem, social critics and sceptical politicians saw IVF as the first step toward an appropriation of human life through medical technology, a medicalization of social problems (such as childlessness and reproduction), and a potential disordering of traditional kinship.

When fertility expert Jørgen Glenn Lauritsen started fertilizing eggs *in vitro* at Rigshospitalet (the University Hospital in Copenhagen) in 1979, after preliminary trials at Aarhus Hospital two years earlier, the use of donor semen for IVF and the treatment of single women were deemed too controversial by medical professionals (Koch and Hansen, 2007). These same professionals, however, had used donor semen for fertilization in earlier trials with eggs that were not to be implanted. In this way they had deliberately avoided disturbing traditional kinship by combining donor insemination with IVF, which would have marked a breach of accepted social conventions that would have hindered the implementation of IVF as a medical treatment. Yet even though IVF was introduced as part of traditional kinship, this did not deter contestation of medicine's authority over it. The introduction of IVF sparked heated debates about the use of medical technology to interfere with the creation of human life. The 'liberation' of the fertilized human egg necessary to perform IVF and its accessibility for genetic manipulation were particularly strong cause for concern. This was not helped by the circumstance that Rigshospitalet – then the only clinic offering IVF – failed to produce further successful births after the birth of the first IVF baby in 1983, something that was deemed necessary to convince critics and legislators that IVF was a reliable and safe treatment.

In light of these developments, the Danish ministry of the interior established a commission in 1983 to assess the ethical problems around IVF. The commission suggested establishing an ethical council that would make recommendations for the future employment of IVF (Indenrigsministeriet, 1984). In 1987, the Danish parliament, Folketinget, adopted a law leading to the establishment of the Danish Council of Ethics (Folketinget, 1987). This law included a definition of human life as beginning at conception. In addition, the law criminalized medical research with fertilized human eggs until parliament had passed adequate legislation. Even though the Danish health authority had approved IVF as a standard treatment and thus one which could be publicly financed already at the end of 1986, the founding of the council nevertheless represented a contestation of medical authority. In so far as the Council of Ethics was to develop ethical principles governing the use of IVF, it was put in charge of an area which, until that point, had been entrusted to the medical community, but which the medical profession's own ethical norms had not managed to handle without severe contestation. Having human eggs on the kitchen table, as Anne Grete Byskov, then head of the laboratory of reproductive biology at Rigshospitalet, put it retrospectively in 2007, turned out to be more provoking than expected (Koch and Hansen, 2007: 15). IVF was thus introduced as a medical

treatment at the cost of more rigorous legal regulation of reproductive biomedicine, limiting medicine's authority as the sole institution in charge of reproduction.

Lene Koch was the first social science researcher in Denmark to study IVF (Koch, 1989, 1990a, 1990b, 1992, 1993; Koch and Morgall, 1987). Following the clinical team at Rigshospitalet and interviewing fourteen women who participated in the early IVF trials in Denmark, Koch's work is representative of the contestations of medical authority that characterized the introduction of IVF in Denmark. Inspired by radical feminist critiques of reproductive technologies, Koch, who was trained in literature and history, focused on the medicalization of reproduction, and not least the female body. She was concerned with control over female bodies by a male-dominated medical profession, and she understood IVF first and foremost as a technology through which power becomes effective: 'The essential virtue of IVF is that it provides the much longed-for "window to the womb" and consequently direct access to the living embryo and to change and control of the human race' (Koch and Morgall, 1987: 189). As Koch argued, IVF, supported by medical authority, hindered reflection on the societal contexts that demand that women become mothers. With her 1989 publication *Ønskebørn: kvinder og reagensglasbefrugtning* (Love children: women and test-tube conception), Koch thus openly contested medical authority over reproduction.

It would take almost another 10 years until IVF was legally regulated. When the Danish fertilization law became effective in 1997, lesbian and single women were excluded from treatment with donor semen and/or IVF (Folketinget, 1997). As the debates leading up to the amendment of the law highlight (Adrian, 2006; Albæk, 2003; Bryld, 2001; Larsen, 2015; Petersen, 2009; Stormhøj, 2002), limiting IVF to traditional kinship relations achieved the political and societal consensus necessary for it to become part of the Danish social fabric at this point in time. It was not until 2006 that donor insemination and IVF were also made available legally for lesbian and single women.

This first part of the social history of Danish IVF thus points to the contestation and negotiation of medicine's authority over reproduction. Medicine could retain its position as the institution sanctioned by the state to assume authority over reproductive matters. This was in part achieved by positioning IVF inside a traditional kinship model. However, this positioning did not assuage all contestations, and thus, in retaining its authoritative position, institutionalized medicine had to surrender some of its autonomy: medical self-regulation was to be limited by restrictive legislation and guidelines as well as institutionalized ethical supervision in the form of the Danish Council of Ethics. The making of Danish IVF thus also remade a central dimension of Danish society's underlying social contract, by renegotiating where and how medicine could assume authority and what state intervention as part of this might look like.

The making of Danish IVF, part two: access to reproductive biomedicine

These contestations of medical authority were accompanied by a further development: negotiations about who might access publicly financed reproductive services. This second

part of the social history of Danish IVF thus looks at the performative dimensions of IVF as social technology – at its potential to legitimate laying claim to reproductive services and a sense of community around them. When IVF was presented as a solution to childlessness by the medical community in the 1980s, it made pursuing parenthood an imperative for everyone, and consequently joined the Danish state and its citizens in the pursuit of procreative futures. While before the advent of IVF, infertility had been regarded as something that needed to be accepted, the possibility of medical intervention for those affected made not pursuing a procreative future an impossible choice. IVF helped to manifest a desire and responsibility for reproduction as an individual as well as a political objective, in the name of a common good.

As the previous section has shown, donor insemination and IVF were legally unregulated for a long time. The Danish fertilization law became effective only in 1997, more than ten years after the approval of IVF as a treatment by the authorities. Binding guidelines for sperm banks were not issued by the Danish health authority until 1994, 19 years after the establishment in 1975 of the first privately owned Danish sperm bank – the central sperm bank (*Den Centrale Sædbank*) – and just four years after the renowned sperm bank *Cryos International* had started its donor programme.

During this period (1986–1997) of legal regulatory void, clinics were free to offer treatment to anyone, including lesbian and single women (later excluded from treatment by the fertilization law). Some of these pathways included private arrangements outside of medical control, for example a collective of gay men donating semen to lesbian women during the 1970s and 80s (DR, 2005). Others took place under medical control, with single and lesbian women able to receive treatment within fertility clinics, and even surrogate pregnancies taking place (*Det Etske Råd*, 1995; *Nordic Council of Ministers*, 2006). In addition, a privately run clinic owned by physician Flemming Christensen in Frederiksberg had started to offer IVF treatments to paying patients even before the Danish health authority's approval of IVF as a safe medical treatment in 1986. This commercial approach to IVF was specifically deemed controversial because, in the eyes of some medical experts, it undermined the principal of equal access to reproductive health services (Koch and Hansen, 2007). The years following the initial introduction of IVF in Denmark were thus characterized by patients pushing for access to reproductive health services, either in the private or the public domain. From being a novel option for the few, access to reproductive health services and IVF became a possibility for every childless person, whether through the tax-financed system or private payment.

These dynamics intensified between 1997 and 2005. By this time IVF had become a medical treatment that was there to stay for good: it was legitimized by legislation, professionalized by medical standards and socialized through public welfare. Yet at the same time, equal access was lacking, since lesbian and single women were excluded from treatment. As made effective in 1997, the fertilization law barred physicians from treating single and lesbian women. Clinics run by midwives, however, were not barred from offering treatment. In 1999 a private fertility clinic run by the midwife Nina Stork made use of this legal loophole so as to offer

insemination procedures to lesbian and single women. This enabled those excluded from treatment in the public domain to claim their right to reproductive health services, and thus further undermined state restrictions (Adrian, 2006). Offering treatment to those whom legislation discriminated against consequently fed into public debates about equality in the Danish public healthcare system, contesting both traditional kinship norms and the legal and medical practices deriving their authority from them (Adrian, 2006, 2010, 2015). Single women pushing for access to IVF treatment and donor insemination paired up with activist medical professionals such as Nina Stork, tolerant physicians and sperm banks willing to assist with the supply of donor semen, thus enforcing an agenda of equality in regard to reproductive health services. Whereas throughout the 1980s IVF had required legitimation as an acceptable treatment option, now it was state-authorized restrictions on the use of IVF that were problematized. Access to reproductive medicine was seen as being about equal citizenship. Whereas IVF had first appeared as a medical solution to infertility, it was now a means to secure a procreative future in which everyone should have the right to take part. When the new fertilization law was amended in 2006 it was thus with a focus on equality and inclusion that IVF and donor insemination were made legally accessible for all women, no matter what their marital status and sexual self-identification.

It was in this climate of reproductive biomedicine emerging as a citizen's right and a state responsibility that Lone Schmidt conducted her dissertation research on infertile couples in Denmark (Schmidt, 1996). Whereas Lene Koch's work was very much characterized by an impetus to challenge medical authority, Schmidt's work might best be understood as arguing for more medical and public health attention to be paid to the needs of those suffering from infertility (Schmidt, 1998, 2006; Schmidt et al., 1995, 2003, 2005a, 2005b, 2005c, 2005d). Schmidt was trained as a physician and thus made IVF meaningful in a different way than a critical feminist like Koch. She was interested in the impact of childlessness on people's psychological health and quality of life. Interviewing 32 heterosexual childless women and men undergoing infertility treatment at the IVF clinic at Herlev Hospital, she analysed people's ways of coping (or not) with infertility and its treatment. As a re-reading of Schmidt's work with an interest in the social dynamics of IVF makes clear, IVF is important not only as a possible treatment for childlessness, but also as a particular life and social trajectory. IVF develops its own dynamics, with Schmidt pointing out that patients often felt as if they had no other choice than to pursue treatment. Furthermore, IVF makes infertility and childlessness legitimate subject positions in a society which perceives having children as an important rite of passage into adulthood. The central role of IVF is thus to give people hope that they too may join a collective invested in the common good of having children.

The particularities of Danish IVF thus can be seen in its role in transforming an additional central dimension of the social contract underlying Danish society, namely the relations between the state and its citizens. As an approved medical treatment, IVF contributed to the claim to reproductive health services. While single and lesbian women had originally been excluded from using these services, the push

to access them, the commercialization of reproductive biomedicine and the subsequent political reform led to their inclusion in the Danish national collective in the form of tax-financed reproductive health services. Whereas previously medical and state authority had limited access to state-financed IVF to heterosexual couples only, now the state needed to honour claims for access to IVF by those formerly excluded in the name of equal citizenship. Thus IVF built a collective sense of responsibility, in so far as it made the pursuit of a procreative future a responsibility of the state and its citizens.

The making of Danish IVF, part three: gendered subjects and reproductive citizens

Just as the first two dynamics of the making of Danish IVF were central to how IVF was made meaningful and legitimate, so is the third and last dynamic we want to discuss. As much as the making of Danish IVF was about questions of medical authority and questions of equal access to treatment, it was also about the making of gendered subjects. With a push for equal access to IVF, as well as an expectation that Denmark as a national welfare community would take responsibility for securing equal rights and access, people using IVF were not merely pursuing reproductive futures. They were also engaging in a collective identity, in which IVF as a social technology produced specifically gendered subjects: IVF helped to constitute gender identities in which imaginations about, and norms pertaining to, what it means to be a woman or a man are linked with the idea of the good citizen as a reproductive citizen, that is, someone who pursues having children as a collectively shared ideal.

As set out above, Denmark emerged from the social and political struggles of the 1970s, 1980s and 1990s as an inclusive welfare state. IVF is offered to women irrespective of their marital status and sexual self-identification, and treatments are paid for within the public domain. IVF has become part of a collective procreative narrative. Sperm banks offer semen from both anonymous and non-anonymous donors, thereby appealing to a diverse clientele. Fertility clinics and sperm banks, both heavily commercialized, offer individualized services attracting a global (though European-dominated) group of customers, while simultaneously being integrated into an assemblage of fertility service providers and biomedical experts.

Yet in order for IVF to become part of Denmark's social fabric, it also needed to involve the individuals who use it. This important point emerged in the social science research on IVF carried out during the 1980s and 1990s. Notwithstanding Lene Koch's critique of IVF laid out above, her work points to the intricate interplay between gender and reproductive technologies (Koch, 1989). She presents IVF as a laboratory in and through which gender is negotiated and amended. Rather than just receiving treatment for a medical condition as postulated by the medical community, women engage in 'doing femininity' through medical treatment and technology, a point that has also figured prominently in subsequent research on IVF (e.g. Franklin, 1997; Thompson, 2005). At the same time, Koch's research also makes clear that in this meeting with technology,

individuals realize the boundaries of their subjectivity and personhood (Koch, 1989). IVF enables a sequencing of the reproductive process, as conception and pregnancy become partitioned into single sequences which can be managed, manipulated and controlled, resulting in an objectivation of reproduction and gender identity. Lone Schmidt broadened these insights by paying close attention to how men experience infertility and its treatment (Schmidt, 1996), thereby anticipating an important development in later social scientific research on IVF and reproductive biomedicine (e.g. Dudgeon and Inhorn, 2003; Gutmann, 1997; Rosenfeld and Faircloth, 2006). Schmidt provides insights into how IVF transforms men's sexual and intimate relationships, and how becoming a patient and having one's semen tested lead to a feeling of estrangement and generate personal anxieties and stress, and not least may lead to understanding oneself as a failure (Schmidt, 1996).

The making of gendered subjects – both masculine and feminine – in and through IVF also reaches beyond the individual subject to wider family and kinship networks, and what might be called the social-civic body politic. IVF not only transforms how relations between partners and between parents and children are built and understood, but also how people form bonds to larger social communities. IVF thus not only involves the gendered subject, but inherently incorporates ideas about the good citizen as a reproductive citizen. This is very much the focus of Tine Tjørnhøj-Thomsen's work at the end of the 1990s (Tjørnhøj-Thomsen, 1999a, 1999b, 2002, 2003a, 2003b, 2004, 2005, 2007, 2009a, 2009b). Tjørnhøj-Thomsen, an anthropologist, interviewed 22 heterosexual couples about their experiences of infertility and its treatment, and conducted participant observation at fertility clinics, adoption courses and medical conferences. She understands IVF as a ritual that aims to turn the childless into full persons and Danish citizens by supporting their quest to become parents (Tjørnhøj-Thomsen, 1999b). With a specific interest in kinship and relatedness, Tjørnhøj-Thomsen explores the dynamic space between gender identity, technology and sociality which IVF fills. In her work, IVF becomes understandable as a social technology that helps to construct a sense of community and togetherness, enabling narratives about the whole and complete self:

That which is supposed to be completed is the narrative which they [couples using IVF] want to tell about themselves and their lives. It is about building continuity in their lives and in their narratives of being connected to different communities through time and space. That is what they look for in reproductive technologies but often do not achieve. (Tjørnhøj-Thomsen, 1999b: 216; our translation)

Thus IVF is in and of itself an expression of the value assigned to reproduction, kinship, and not least, social connectivity in the Danish context. In this sense IVF becomes a technology of social contract, since it links people's individual understandings of what it might mean to be a woman or man with the ideal of the common good of having children. It offers a path to inclusion and symbolizes a set of shared collective values because its incorporation into the apparatus of the state, even though it may never achieve full restitution of childlessness for all, means that

those who try are formally recognized as good reproductive citizens.

This part of the social and cultural history of Danish IVF thus highlights the point that the introduction of IVF in Denmark also marked a transformation in personal and collective identity. In their research Lene Koch, Lone Schmidt and Tine Tjørnhøj-Thomsen all attended to how people make the use of IVF meaningful in their lives. Re-reading this work with a particular focus on the social dynamics of IVF highlighted that the use of IVF is also about the making of gendered subjects as good reproductive citizens. IVF impacts how people 'do' and 'think' themselves and their relationships. It becomes part of people's sense of belonging and of sociality. IVF 'makes' subjects, in the sense that it helps people to establish social bonds, thus providing connections to partners and families, but also to communities, such as motherhood and fatherhood, as well as to national collectives. Yet while IVF instils the hope of attaining a state of wholeness and social belonging, it also reveals the unattainability of a whole self by disclosing each subject's individual and social fragmentation.

The making of Denmark: IVF as a technology of social contract

What began as a medical attempt to help childless heterosexual couples have children has become a widely used and integral part of the Danish social fabric. IVF transformed Denmark: the use of reproductive biomedicine became normalized to the degree that access to reproductive health services is not regarded just as an individual matter, but a collective responsibility. At the same time, IVF was transformed from being a contested medical intervention to becoming an integral part of how to achieve membership in the procreative Danish collective. Eight percent of children born in Denmark every year are conceived using reproductive biomedicine. These children are the product of a collective reproductive investment in so far as access to reproductive health services is tax-financed and the technologies used are socially accepted. They are the outcome of an agreement between state and citizens that procreative futures should be desired by, and accessible to, everyone.

The three episodes from the social and cultural history of Danish IVF that we have presented here highlight the fact that this point was not reached without social and political struggle. Medical authority over, and equal access to, IVF have both been contested, and individuals have faced their own subjective frailty when using IVF. For IVF to become a collective project, Danish society needed to be transformed. Whereas before the arrival of IVF, the state had established a contract with the medical community that secured medical self-regulation and medical authority over what health services should be provided and to whom, the introduction of IVF and the commercialization of fertility services, as well as the claims to reproductive health services by patients, led to increased citizen autonomy. These developments away from centralized control and toward greater patient autonomy are mirrored in the overall change undergone by the Danish welfare state model during the 1980s and 1990s, which established the right to self-determination in (reproductive) health matters as an

integral part of how state–citizen relations and a collective sense of responsibility were to be understood (Petersen et al., 2013). In a post-IVF period, it is thus the patient in alliance with the state who has gained influence on what kind of reproductive health services should be accessible, and to whom.

The three stories we have told of the making of Danish IVF render the social and cultural history of IVF in Denmark understandable as a process in which a treatment that once was deemed disruptive of traditional family values came to be seen as part of a progressive social contract in which Danish citizenship also stands for inclusion in medical scientific progress via IVF for everyone. Whereas originally IVF was thought to alleviate the exclusion of some from reproduction, it became a symbol of inclusion more generally. When IVF was introduced, there was harsh opposition to it and a rejection of non-traditional families; once approved, it gained swift acceptance, but non-traditional families still met disapproval; and today, IVF is accessible to (almost) everyone, helping to create all kinds of non-traditional families, with Statistics Denmark currently registering 37 different family types. Thus whereas in the 1970s and 1980s IVF was too controversial to be offered outside of heterosexual coupledom, today IVF marks Denmark as a reproductive collective. IVF is not, and never was, simply a medical solution to an individual problem; it is a technology of social contract that helps to make citizens, a technology that makes people belong to a national collective. The making of Danish IVF has become the making of Denmark.

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