The ART clock: Temporal limits to assisted reproduction

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Abstract  Conceptualizations of the ‘biological clock’ in popular imaginary in the USA centre on the temporal limits of fertility, with assisted reproductive technology (ART) an increasingly proposed answer to these constraints (at least in the public imaginary). In this study, I analyse how surrogates in the USA understand their own bioavailability for others’ reproductive needs in the commercial ART market vis-à-vis their own reproductive trajectories. Based on interview data with gestational surrogates, I propose a new concept of the ‘ART clock’ to capture how time shapes the experiences of reproductive workers in the US fertility clinic. My findings point to four important ART time-related issues: (i) women desiring to extend their own ‘biological clocks’ via surrogacy; (ii) significant time being needed to achieve and sustain third-party pregnancy; (iii) women extending their total reproductive time via repeat surrogacy journeys; and (iv) temporal constraints to surrogacy reproduction regarding time of year, the day-to-day time effort, the number of surrogacy journeys, the total number of pregnancies, and surrogates’ age and the ages of their children. Each of these aspects point to important ways that reproductive desire and time shape the labour of reproductive workers, highlighting temporal constraints to assisted reproduction and limits to ART as a solution to delayed reproduction and the biological clock.

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Introduction

Recent media reports of a ‘pandemic baby bust’ reinforce decades-long concerns about increasing numbers of people postponing parenthood, and what that might mean both for individuals and for the wider society (Broster, 2021; Dockterman, 2020). These concerns coalesce in the concept of the ‘biological clock’, which first emerged in the US popular imaginary in the 1970s during a time of significant...
changes in family formation, access to contraception and legalized abortion, decreasing wages and job stability, and women’s increased participation in paid work and higher education (Bratti and Cavalli, 2014; Daniluk et al., 2012; Friese et al., 2006). A corresponding rising age of first birth and decreasing national birth rate resulted in heightened concerns about fertility (Casper and Bianchi, 2001; Li et al., 2011; Wyndham et al., 2012). These demographic shifts have only expanded in the last 50 years (sharply, it appears, during the pandemic), and have been problematized by different actors for a variety of individual, social and political reasons (Bratti and Cavalli, 2014; Gallagher, 2020; Kearney and Monday, 2020; Li et al., 2011; Waldby and Cooper, 2008). The ‘ticking of the biological clock’ has been a sieve for these concerns, laid at the feet of women seen to be voluntarily deferring pregnancy (or giving it up altogether) (Briggs, 2017; Damaske, 2011; Harwood, 2007; Roberts, 1997).

One proposed solution to delayed reproduction and the biological clock, which seems to be increasingly popular (in the public imagination, if not in reality) is assisted reproductive technology (ART) (Daniluk et al., 2012; Friese et al., 2006; Sandelowski, 1991; Thompson, 2005; Waldby and Cooper, 2008; Wyndham et al., 2012). The ‘ART solution’ has entered the public consciousness as an individualized strategy to deal with postponed parenthood, but ART is not individually enacted. It is highly dependent on others: not only clinicians, but also those who donate their oocytes, sperm and gestational/birthing abilities — and their time. Through their own bodily and time investments, reproductive workers1 — the gamete donors and surrogates — enable the delayed or medically challenged attempts at childbearing of others ‘running out of time’ on their biological clocks.2

In the present paper, I analyse how one specific group of reproductive workers – US commercial surrogates – understand their own availability for others’ reproduction. I ask, how does surrogacy fit into surrogates’ own reproductive trajectories? Do ideas about reproductive timing and reproductive desire (the twin bedrocks of the biological clock) shape their surrogacy work? How do surrogates think about reproductive workers’ own reproductive trajectories? Do ideas about reproductive timing and reproductive desire (the twin bedrocks of the biological clock) shape their surrogacy work? How do surrogates think about reproductive timing, the ART clock has unique characteristics that are particularly evident when viewed via the experiences of reproductive workers who are ‘donating’ their reproductive matter or abilities for others’ pregnancy attempts. In this paper, I provide empirical evidence of the experiences of US gestational surrogates to explore the dynamics of the ART clock specific to US surrogacy. I posit the ART clock as a concept that can contribute to understandings of reproductive timing and reproductive labour.

US surrogacy and reproductive timing

Gestational surrogacy in the USA is embedded in a robust ART market that has grown, even as understandings of age-related fertility, the challenges of fertility treatment, its cost and limited accessibility, and specific ART procedures are not well understood by the general public (Daniluk et al., 2012; Jensen et al., 2018; Kudesia et al., 2017; Law, 2020). Author comparisons of data published by the Centers of Disease Control and Prevention (CDC) in their annual national summary reports (CDC, 2019) point to increased utilization of ART despite <35% of all intended ART retrievals currently ending in a live birth. Not only are there low overall success rates, which vary considerably by the age of the oocytes used, but the more complicated ART procedures, such as in-vitro fertilization (IVF) and embryo cryopreservation, used in gestational surrogacy (which are often exactly those proposed as possible solutions to future infertility) are not often covered by health insurance and are prohibitively expensive for many in the USA, making them a privilege afforded to a niche, relatively wealthy, clientele (Bell, 2014; Briggs, 2017; Conrad and Leiter, 2004; Greil et al., 2011; Jacobson, 2020; Seifer et al., 2018).

Although comprehensive national longitudinal data on US surrogacy do not exist, limited CDC data indicate increased rates of ART cycles utilizing surrogates in the USA (Birenbaum-Carmeli and Montebruno, 2019; Jacobson, 2018). This finding is confirmed by ethnographic research, according to which surrogacy is frequently framed as a miracle and a ‘precious gift’ by intended parents who experience success in using it to welcome a child into their lives (Berend, 2016; Deomampo, 2016; Majumdar, 2017; Jacobson, 2016; Pande, 2011; Ragone, 1994; Rudrappa, 2015; Teman, 2010). Although some fertility clinics will work with patient-clients for social reasons, such as being afraid of pregnancy or not wanting to ‘ruin’ one’s figure, intended parents typically utilize US surrogacy for three reasons: medical conditions precluding pregnancy; repeat IVF failure; and ‘biologic inability to conceive or bear a child’ (Lewin, 2014; Practice Committee of the American Society for Reproductive and Practice Committee of the Society for Assisted Reproductive, 2017; Richards, 2014).

Surrogacy, particularly for coupled heterosexual intended parents, often comes at the end of a significant time investment in fertility treatment (Berend, 2016; Jacobson, 2016; Teman, 2010). Therefore, in addition to ‘ovarian reserve issues’ (if the intended mother’s oocytes are being used), the ‘clock’ that is running out for surrogacy clients is often one related to the ability — financially, emo-

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1 I join others, such as Anderson (1990), Pande (2009), Vora (2010), Boris and Parreñas (2010), Rudrappa (2015), Smietana et al. (2021), Waldby and Cooper (2008), and Cooper and Waldby (2014), in considering the labour of conception, gestation and birth as a form of work, and those who engage in this labour in the commodified surrogacy industry as reproductive workers.

2 There are other reasons why patient/clients use ART, such as not having a partner with oocytes, a uterus or sperm as is the case for gay, lesbian and/or single intended parents. As I argue in this paper, however, temporal constraints face all ART-intended parents.
tionally and psychologically — to sustain additional treatment on the ‘infertility treadmill’; to persist and remain hopeful that a baby awaits at the end of the next procedure (Harwood, 2007; Spar, 2006). As Becker (2000) thoughtfully demonstrated in her classic work on ART, hope and persistence are hallmarks of the fertility treatment experience, and are embedded in the organization and advertising strategies of the US fertility industry. ART patients, Becker shows, come to ‘equate new reproductive technologies with hope’ and display high levels of persistence, even despite repeat failure (Becker, 2000: 117). A hallmark of this persistent hope is the investment not only of money, but of time.

The ethnographic literature on ART has detailed the experiences of patient-clients, their desire for children, and their challenges achieving parenthood due to infertility and cost (Becker, 2000; Inhorn, 2015; Spar, 2006; Thompson, 2005). This research has highlighted the intense time investments that many patient-clients expend in their attempts to achieve pregnancy and birth (Becker, 2000; Friese et al., 2006; Hertz, 2006; Speier, 2016). As Amy Speier (2016: 19) notes, ‘when couples confront infertility, they often respond by embracing ideological notions of hard work in pursuing IVF’. This ‘hard work’ is time-intensive and is part and parcel of the contemporary biomedical model, as Clarke et al. (2003: 172) articulate, in which ‘health becomes something to work toward’, a moral project, as Peter Conrad (1992) has discussed, in and of itself. In a particularly painful way, given the important temporal factor of age and fertility, time works against the hard work of pursuing ART as more time in treatment is correlated with diminishing possibilities of success and more complex time-heavy procedures (Harwood, 2007; Spar, 2006; Thompson, 2005: 111).

The time investment that intended parents give to reproduction and to surrogacy is easily culturally discernable to others in countries with strong pronatalist tendencies such as the USA and Israel (McQuillan et al., 2008; Teman, 2010). For those assisting them — the women gestating and bearing their children — the motivation to engage in this arrangement and their investment of time and effort is often less clear to the general public and has been a major touchstone of concern.

Over the course of the last 40 years, there has been a lot of speculation in the public sphere about the motivations of women to engage in paid gestation and birth for others. Often, women are assumed to be either willingly or coercively participating in an exploitative process: one seeking to dupe them, or allow them to dupe others, in order to profit off their wombs (Deomampo, 2013; Markens, 2012; Teman, 2010). The commodification of reproduction and the separation of gestation from social/legal mothering have been significant concerns for various groups from the beginning of organized surrogacy in the USA (Corea, 1985; Markens, 2007; Rothman, 1989; Weiss, 1992). Surrogacy has been particularly controversial due to racial/ethnic and economic disparities evident in the organization of the global surrogacy industry (Deomampo, 2016; Hovav, 2019; Majumdar, 2017; Rigg and Due, 2019; Rudrapa and Collins, 2015; Whittaker, 2018). Controversial US domestic cases of surrogacy gone awry, such as Baby M or Johnson v. Calvert, have also captured attention, bringing sharp critique (Markens, 2012; Teman, 2019). A growing body of empirical research on surrogacy, however, posits that the situation is more complex, especially in the US surrogacy market (Berend, 2016; Jacobson, 2016, 2021; Riggs and Due, 2019; Rudrapa, 2015; Teman, 2019; Ziff, 2017).

The small but growing body of ethnographic research on surrogacy in the USA addresses this question of motivation to participate in third-party pregnancy and potentials for exploitation. Researchers have established that US surrogates are most often white, married and lower/middle class mothers who have some financial stability. The majority are monetarily compensated (with an average of $25,000–30,000 for a successful ‘journey’ ending in a live birth) and report enjoying pregnancy and satisfaction with their surrogacy experiences (Berend, 2016; Jacobson, 2016, 2021; Ragone, 1994; Ziff, 2017, 2019). In this paper, I am particularly interested in how US surrogates themselves strategize the timing of third-party pregnancy, and how they understand their surrogacy time investments. In other words, how is reproductive timing understood and experienced when reproductive efforts are invested in the gestation and birthing of someone else’s child rather than one’s own?

From the biological clock to the ART clock

The issues of reproductive desire and time are central to concerns about contemporary reproduction and the common articulation of the biological clock. Visible in the discourse surrounding the biological clock, for example, are strong gendered expectations prevalent in the USA since the 19th century of an innate ‘visceral physical and emotional desire’ for children — a ‘baby fever’ — that women are thought to hold (Brase and Brase, 2012: 1; McQuillan et al., 2008; Zelizer, 1994). These expectations reflect and result in pressure for US women — especially white, middle-class women — to desire children and to reproduce (Roberts, 1997; Van Balen and Inhorn, 2002). This pressure remains strong even as the age of first birth continues to climb, the number of total births decreases, and a new cultural acceptance of voluntary childlessness has emerged (Koropeckyj-Cox and Pendell, 2007).

Time is also central to the notion of the biological clock; namely, the idea that birth has a proper time, one that aligns with age and placement in the life course (Earle and Letherby, 2007). The inability to conceive, gestate and bear children is only considered a problem for those of reproductive age who have reached a culturally-accepted time in their reproduction itself is viewed as ‘appropriate’ (Bell, 2016). This problem of childlessness was once primarily a social issue; it is now also a medical issue via the medicalization of ‘infertility’ (Friese et al., 2006; Greil et al., 2011; Majumdar, 2018). As Conrad (1992: 211) articulated in one of his classic works on the concept, ‘medicalization consists of defining a problem in medical terms, using medical language to describe a problem, adopting a medical framework to understand a problem, or using a medical intervention to “treat” it’. The inability to conceive and/or carry a pregnancy to live birth became a medical problem once there were medical options available for treatment — and once these medical options developed, markets followed (Conrad and Leiter, 2004; Greil and McQuillan, 2010; Spar, 2006).
The clinical diagnosis of infertility — the failure to conceive after 12 months of unprotected sex — has time at its core (Greil et al., 2011). Current fertility treatment also privileges time. While the ‘biological clock’ previously centred on menopause as the anxious deadline to reproduce, with advances in reproductive medicine, treatment now focuses on the aging of oocytes and ‘diminished ovarian reserve’ which comes, typically, at a younger age (Friese et al., 2006; Greil et al., 2011; Sharara et al., 1998; Thompson, 2005). Friese et al. (2006: 1552) note that this shift is ‘significant because it ruptures the longstanding historical connections between menstruation and female reproductive capacity by specifically focusing on women’s eggs’. This focus on the age and quality of eggs, in turn, increases reliance on medical expertise to determine fertility and on medical technologies to ‘treat’ infertility. Advanced maternal age, a widely accepted and used medical term, is now considered to begin at 35 years (Attali and Yogev, 2020), so while the desire for children is understood to remain strong for many women in the USA, the ‘correct’ window of time for ‘healthy’ reproduction is increasingly — and often anxiously — framed as winnowing.

This winnowing is reflected in the practices and rhetoric surrounding new ART programmes such as elective oocyte freezing (often called ‘fertility preservation’ by the ART industry) geared at young women’s potential future infertility (Martin, 2010; Van de Wiel, 2015; Inhorn et al., 2020). It can also be seen in the uptick of third-party reproduction and the ART market promoting it, especially for ‘older’ patient-clients relying on the oocytes of younger women and the uteruses of others. These programmes are a good example of what reproductive scholars have been pointing out for the last several decades: with the development of ART, the medicalization of infertility — and the proliferation of the ART market — has intensified (Bell, 2016; Friese et al., 2006; Greil and McQuillan, 2010; Martin, 2010; Sandelowski, 1991). In these ways, the ART market is responding to — but also defining and profiting from — biological clock constraints and ‘failures’. As the market expands, so too seemingly do the temporal dimensions of reproduction, with these new programmes created around both extended fertility (people able to have children born later in life) and what Lauren Jade Martin (2010) has coined ‘anticipated infertility’ (people able to ‘pre-treat’ possible infertility younger in life). Reproductive time and timing shift in the fertility clinic, so much so that I propose a new ‘clock’ conceptualization: the ART clock. This concept captures important dimensions of assisted reproduction that mirror the biological clock — namely, reproductive desire and temporal constraints.

The ART clock elucidates how timing constraints in ART vary considerably from non-ART reproduction. On the one hand, this is directly related to ART reproduction occurring within the world of organization medicine. As Charis Thompson (2005, 111) discusses in her ethnography of ART:

in an infertility clinic, time is organized around the working day and progresses linearly, like most other bureaucratic office places. Calendars and other scheduling devices are calibrated to make incremental passages of time. For the patients, visits to the clinic must be fitted into working days and coordinated with their own working schedules.

The ART clock acknowledges those daily time constraints — so distinct from reproduction outside of the fertility clinic — which shape the experiences not only of patient-clients but of reproductive workers as they engage in the various activities related to ART treatment. The ART clock also captures larger temporal dimensions of fertility treatment.

Just as the concept of the biological clock is meant to conceptualize the temporal limits of reproduction and is used especially in contexts of those attempting pregnancy facing winnowing opportunities, the ART clock articulates similar temporal constraints and winnowing opportunities in the fertility clinic. The ART clock can be seen, for example, in the battles that intended parents face in terms of the emotional, psychological, physical and financial limits common to those who spend extended time in US fertility treatment (Becker, 2000; Friese et al., 2006; Speier, 2016; Thompson, 2005). The ART clock forces acknowledgement that assisted reproduction has temporal limits — even as ART is proposed and marketed in the public sphere as a seemingly endlessly possible route to parenthood for those experiencing infertility or contemplating future reproductive challenges (Friese et al., 2006; Sandelowski, 1991; Wyndham et al., 2012). In this paper, the temporal dimensions of the ART clock from the perspective of US gestational surrogates are explicated.

Methods

This study is based on 32 in-depth interviews with US gestational surrogates collected during two phases. The majority of data were collected over a 4-year period, from 2009 to 2013, during which 31 US surrogates were interviewed for a larger study on gestational surrogacy in the USA. The second phase of data collection began in 2016 and is an ongoing part of a larger study on the US ART industry. In the second phase, one additional surrogate was interviewed and several surrogates from the early phase were recontacted for updates.

To be eligible for participation, women had to have worked (or be working) as paid gestational surrogates in the USA. Recruitment during the first phase was limited geographically to Texas and California, two surrogacy-friendly states; the second phase was opened to any state. Participants were recruited for the larger studies using both purposive and snowball sampling techniques via the connected web of US surrogates, surrogacy agencies and other surrogacy professionals (reproductive endocrinologists, attorneys specializing in reproductive law, and counsellors).

At the time of the first interview, the 32 surrogates in this study were aged 25–45 years. Most (84%) were in heterosexual marriages, self-identified as white (93%), worked outside of the home in paid employment (62.5%) largely in female-dominated occupations (nursing, teaching, retail, social work), and had attended some college (34%) or had a college degree (43%). They were all mothers to children they had birthed themselves; although this was not a requirement for recruitment into this study, it was a condition of the surrogacy agencies and fertility clinics with whom these women worked, as was having ‘completed their
own families’ (i.e. not wanting more children). The majority of participants (75%) had either two or three children of their own. All but one study participant reported that at the time of their first surrogacy journey, they emphatically did not want to/could not bring another child into their family.

After receiving informed consent, five interviews occurred by telephone; the remaining 27 interviews were in-person and completed primarily in surrogates’ homes. Any follow-up contact occurred by telephone or via e-mail. The interviews averaged 2.5 h in length (range 45 min to 4.5 h) and all were recorded digitally and transcribed verbatim. Participants provided additional demographic, family and reproductive history information via a ‘face sheet’.

The interviews with surrogates during both phases centered on how they themselves understood and discussed their own experiences working as gestational surrogates: their motivations; the procedures and processes involved; and their relationships with intended parents, professionals, their own families and others in the surrogacy community. In the second phase, questions about the impact of the coronavirus disease 2019 pandemic on surrogacy experiences were also included. A standardized interview guide was used in both phases.

Data analysis was in the qualitative tradition of an iterative process of reading the transcripts, writing summary and analytical memos, and generating codes (Gerson and Damaske, 2020). The qualitative software program Atlas.ti was used to manage the data and facilitate memo-writing and coding, which allowed data to be isolated by code for continued analysis. This paper centers specifically on reproductive desire and reproductive timing. Two codes relevant to those concepts — surrogacy time and love of pregnancy — emerged during data analysis. Elsewhere (Jacobson, 2016), I have explored the larger cultural scripts regarding US surrogates’ motivations, their facilitation by the US ART industry, and the role that they play in making surrogacy palatable and profitable for a US consumer-base. My focus differs in the present paper; here, I examine a narrower thread in surrogates’ narratives of their work. I look specifically at surrogates’ expectations and behaviors associated with time and the timing of surrogacy pregnancies and their reproductive desires. I centered the data analysis for this paper on the specific data within my interviews from which the concept of the ART clock grew. The analysis contained in this paper is, therefore, a thin slice of the surrogacy experience for US gestational surrogates, and does not capture the full complexity or nuances of their motivations or experiences.

Findings: extending reproductive time

In my interviews with US gestational surrogates, the issue of reproductive time and timing arose in several important ways. The first was a desire that women expressed to extend their time in reproduction. Having birthed their final child (of their own) and closed the reproductive chapter of their lives, participants in this study described a sadness that overcame them when they realized they would not experience pregnancy or birth again. April Palmer (all names are pseudonyms), a 35-year-old mother of two and two-time surrogate, pregnant on her third surrogacy journey, summed this up:

After I had my younger daughter, we knew that we were done having children. [My daughters] were born very close in age, which was unexpected. And we knew we didn’t want the risk of that occurring again. So I went ahead and had my tubes tied. But I knew that I wanted to… I loved pregnancy and I really couldn’t imagine not having that experience again.

Similar bittersweet feelings at having completed their reproductive lives — and a desire to extend those experiences — were reported by all of the women in this study. Participants stated that they enjoyed the embodied experience of pregnancy, particularly the feelings of fetal movement and the effects of pregnancy hormones on their mood. All of the women in this study also shared that pregnancy and birth were ‘easy’ for them. This can be seen in the comments of Molly Hughes, a 29-year-old mother of two and two-time surrogate:

I love being pregnant itself. I had super easy pregnancies. No sickness, nothing. And I had my issues with birth. Not every birth is perfect but, I don’t know, being pregnant and feeling the baby and then giving birth, it just wasn’t this horrible, awful thing that people make it sound like in the movies and stuff. So, easy deliveries and heartbroken. I knew we didn’t want any more [children]. We had our boy and our girl. We were good to go, but heartbroken that I was never going to be pregnant again. So I started looking into surrogacy.

Like Molly and April, the other surrogates with whom I spoke saw themselves as skilled at pregnancy and birth, they enjoyed it and were ‘heartbroken’ that they were ‘never going to be pregnant again’.

All of the women in this study told me that although they did not want more children, they were ‘not done’ with pregnancy and were ‘delighted’ to have found an arrangement allowing them to experience it again — while being monetarily compensated for doing so — without having to assume responsibility for another child. I have found this to be a popular framing of surrogacy in the USA as have others (Berend, 2016; Jacobson, 2016; Ragone, 1994; Ziff, 2017). Part of this framing rests on the feelings of accomplishment and importance that women derive from their involvement in surrogacy (Jacobson, 2021; Teman, 2010). By extending their reproductive time via third-party pregnancy, these women provide a service that is understood by intended parents, many of whom have struggled to have a child, as life-changing and is deeply appreciated, which is sometimes demonstrated through compliments, attention and gifts in addition to monetary compensation. Research has explored how the US surrogacy industry itself encourages these particular framings of surrogates’ motivations and skills while downplaying the commodification of reproduction and compensation that surrogates receive (Jacobson, 2016; Markens, 2012; Smietana et al., 2021). In addition to wanting to extend their time in reproduction via surrogacy, examining the time that women spend as surrogates highlights several other temporal dimensions specific to the ART clock.
Time as a surrogate

A second important temporal dimension to surrogacy that arose during my interviews with gestational surrogates was the length of time required to achieve pregnancy within assisted reproduction. Outside of two new surrogates, the women in this study had been participating in surrogacy for at least 1 year, most had been involved for several years, and a couple of women had spent nearly a decade in third-party reproduction. At the time of the interviews, 30 women in the study had successfully completed one (n = 16) or more (n = 14) surrogacy arrangements, resulting in the birth of 71 children (including 20 sets of multiples). The two women who had yet to give birth to a ‘surro-baby’ were en route. Some surrogacy journeys took approximately 12 months from start to finish; others were significantly longer due to the complications of assisted reproduction.

The shift from non-assisted personal reproduction to commodified ART third-party pregnancy results in an intense time commitment (Jacobson, 2016). Gestational surrogacy, which involves IVF, requires a regime of medications for multiple people, a battery of tests, multiple doctors visits with specialists, and medical monitoring—all of which were new to the women in this study at the time of their first surrogacy journey. Only one surrogate had experienced difficulty achieving pregnancy (with her own children), and none of the surrogates had previous experience with advanced ART or IVF prior to their work as a surrogate. Their role as a surrogate was, therefore, their first personal foray into the world of assisted reproduction which commonly involves delays, failures and extended time commitments (Becker, 2000; Thompson, 2005).

Time spent in third-party pregnancy differed in several important ways from time spent in previous reproductive experiences for US surrogates. Most obviously, ‘surro-pregnancies’ are facilitating the parenting of other people, not oneself—and they are monetarily compensated within an ART industry. In the USA, surrogacy is largely structured as a type of cooperative venture between surrogates and intended parents who work together towards the shared goal of live birth and, in doing so, get to know each other, rather than one popular in other reprohubs (e.g. India) where interactions are limited and sometimes the identities of the parties are closed to each other (Rudrappa, 2012). As I have detailed elsewhere (Jacobson, 2016), this often results in a significant time investment by US surrogates in the interactions they have and the relationships they form with the intended parents with whom they are matched.

Those interactions and relationships are formed in the context of time-intensive infertility treatment, which is a new milieu for first-time surrogates. As one of the women in this study, Deanna Meer, a mother of two and two-time surrogate, explained: ‘when you join surrogacy, you join the land of infertility’ which, in the USA, is full of time delays. These delays came as a surprise to new surrogates, who, like Ashley Padilla, a mother of five and two-time surrogate on her third journey, prior to surrogacy had ‘never seen a negative pregnancy test before’.

The time period for surrogates between signing on with a surrogacy agency or fertility clinic and pregnancy involves multiple steps with various agency staff, healthcare providers and other professionals (such as attorneys and counsellors). Medical testing, counselling, matching between surrogates and intended parents, contract negotiation, mock embryo transfers, egg and sperm retrieval, embryo creation and testing, the medical protocol to prepare the body to accept an embryo, embryo transfer and the ‘2-week wait’ between embryo transfer and official clinic pregnancy test all need to occur before a pregnancy announcement. This extended time period can be frustrating for new surrogates as they are eager to become pregnant. As Deidre Richards, a two-time surrogate and mother of two, explained:

‘when I first started [surrogacy] I had no idea really what to expect early on. And there’s a lot involved early on. And a lot of waiting. And I think when a surrogate is ready to carry for somebody, they’re like, ‘Okay. Get me signed up! Make my appointment next week and we’ll transfer some embryos!’ And it doesn’t happen that fast.

Not only did pregnancy via surrogacy take more time than these women were used to, but the time spent in attempting a surrogacy pregnancy was mentally and physically taxing in new ways due to the number of required steps, doctor’s appointments, medications, and the intensity of these processes which commonly involved pregnancy failure. The demanding nature of surrogacy work aligns with descriptions of women’s experiences navigating and managing fertility treatment for themselves (Becker, 2000; Harwood, 2007; Speier, 2016; Thompson, 2005). An important distinction of the labour in which surrogates are involved, of course, is that surrogates are not experiencing infertility themselves; their bodily work is not being performed on behalf of their own health, fertility or parenting. This intense reproductive work is of them, but not for them. This idea is captured well by Waldby and Cooper (2008: 59) in their concept of ‘clinical labour’, with which they examine how reproductive workers’ very bodies become the site of third-party reproduction via clinical ‘access to the productivity of their in vivo biology, the biological labour of living tissues and reproductive processes’.

Given the intensity of surrogacy work and surrogates’ investment in success, it is not surprising that some women shared with me that they had a difficult time not thinking about themselves as infertile. This was especially common when women were on their initial journeys and experiencing surrogacy for the first time. Rosalyn Wheelan, for example, a new surrogate and mother of one, told me:

‘sometimes I do have to remind myself, ‘I’m not infertile’. Because I forget. Because it’s really easy to lose yourself because you do have to really understand and try to really listen and be there for [intended parents]. So sometimes it’s hard to remind yourself, ‘OK, I’m not doing IVF for myself. I’m not infertile, I’m just helping someone who is’.

As Roslyn and others articulated, ‘losing yourself’ in the intensity of surrogacy work, in the time and effort of fertility treatment, in the clinical labour, sometimes translates to fully taking on infertility as part of one’s identity, which was an uncomfortable and largely untenable position for surrogates. This idea of the blurring of identities and body boundaries and the strategies that surrogates and intended
mothers employ in the process to establish ‘correct’ positions is detailed beautifully by Teman (2010) in her ethnography on surrogacy in Israel.

Time spent as a gestational surrogate in the USA involves more than just pregnancy. It encompasses a host of activities, medical procedures and social necessities – including the accompanying medical protocol and procedures (hysteroscopy, vaginal ultrasound, embryo transfer, bedrest, possible fetal reduction and/or caesarean section). These aspects of gestational surrogacy were not articulated by the women in this study as aspects of reproductive work that drew them to surrogacy; rather, they consistently and emphatically shared with me that they wanted to extend their reproductive experiences via surrogacy pregnancy which would enable them to be pregnant but not have another child for whom to care. The time necessary to achieve third-party pregnancy, however, came as a surprise to many. In ‘Labor of Love’ ( Jacobson, 2016 ), I argue that the work of surrogacy, which is time-intensive and not without physical and emotional risks, and the idea of surrogacy as paid labour are deliberately obscured by all stakeholders (including surrogates) in order to make surrogacy culturally palatable to a US audience, acceptable to surrogates and their families, and profitable to the industry. Interestingly, however, for surrogates, despite these new experiences in fertility treatment, time delays, an uncomfortable medical protocol which comes with risk, and the increased time commitment and labour involved, the women in this study reported that they came to enjoy their surrogacy journeys — so much so that many wanted to extend their time in third-party reproduction.

**Extending time in third-party reproduction**

Based on positive surrogacy experiences, after having completed one successful journey, most of the women in this study (93%) told me they wanted to do another. For many, engaging in multiple surrogacies was not their original intent; most thought they would do just one journey, only to find themselves back again, wanting to do more. The experience of Andrea Tyson, a 31-year-old three-time surrogate and mother of one, was typical. She told me, ‘I thought I would only do it once. ’I’ll just do this one time. I’m young. I’m not having any more kids of my own right now. No big deal’. But ‘once’ turned into another time and another time. And on from there!’ Like Andrea, having completed one journey, the women in the study found themselves wanting to extend their time in surrogacy.

Experienced surrogates are welcomed by the US surrogacy industry as they are seen to be reliable and to possess important knowledge about third-party reproduction that helps to smooth the process for intended parents. As such, women who have successfully birthed a live infant for whom the intended parents assumed legal custody without issue (on the part of the surrogate), generally receive more compensation and are actively recruited by surrogacy agencies and clinics (Berend, 2016; Jacobson, 2016). Surrogates reported engaging in multiple journeys not only because surrogacy allowed them to experience pregnancy again, but out of the joy that the surrogacy process itself brought to them. As I have discussed elsewhere (Jacobson, 2016, 2021), US surrogates’ motivation narratives centre on these aspects of enjoyment rather than compensation, although I have argued that compensation is nevertheless an essential feature of their participation in the US surrogacy market.

Surrogates reported that they ‘fell in love’ with surrogacy, which became an important part of their identity, shaping their social networks and leisure time, as Berend (2016) found in her ethnographic work on US surrogacy. Similar to their experiences following the births of their own last child, many participants shared feelings of letdown or sadness once their journeys concluded. These feelings of what might be called ‘post-surrogacy blues’ (different from — but perhaps also related to — ‘baby blues’ or postpartum depression) were mitigated for some by beginning the process over again; so while a desire to extend their reproductive lives brought many of the women in this study to surrogacy, it was the surrogacy process itself — despite the extended time commitments — that got them ‘hooked’ on surrogacy.

Many women had told me, in a joking kind of way, that they had actually become ‘addicted’ to surrogacy and wanted to extend their reproductive experiences within the world of third-party pregnancy (Jacobson, 2016). Tina Vargas, a mother of four and two-time surrogate, shared, ‘I’m addicted to being pregnant!’ Tina found herself feeling ‘mopey’ at the thought she would ‘never get to experience [pregnancy] again’. And when she saw other women pregnant, she would think, ‘Why does she get to be pregnant and I don’t?’ These urges to experience a surrogacy pregnancy again propelled Tina and the other women in this study to complete multiple surrogacy journeys. The ‘surrogacy addiction’ that women reported was also shaped by the compensation they received; positive experiences with intended parents; and feelings of importance, joy and satisfaction they felt in the instrumental role they played in ‘fulfilling someone’s dream’ of becoming a mother or father. These tangible benefits to surrogacy for surrogates are common findings in the ethnographic surrogacy literature in the USA and Israel (Berend, 2016; Jacobson, 2016, 2021; Ragone, 1994; Smietana et al., 2021; Teman, 2010; Ziff, 2017, 2019). The women in this study articulated strong empathy for the infertility struggles of intended parents. This further cemented their interest in engaging in surrogacy multiple times. As Ann Beiter, a mother of four and two-time surrogate, commented, ‘I think when you get in that [mode] of helping people, you wish you could help everybody’. Ann went on to note this was especially the case as surrogates have ‘gotten all the messages and stories from [intended parents] and what they’ve had to go through’. This desire to help as many people as possible was repeated frequently by the women in this study. As Ann put it, the other surrogates she knew ‘all feel the same way. They would help everybody if they could. And it’s not possible!’ As Ann indicates, although surrogates may want to do surrogacy ‘again and again and again’ to experience that accomplishment ‘high’, most cannot — for several important reasons that place time constraints on their surrogacy work.
Surrogacy time constraints

Despite the fact that US surrogates report enjoying their surrogacy experiences and want to extend them, surrogacy work — and all ART — is not without temporal boundaries. This was another important surrogacy time aspect that emerged during interviews: participation in surrogacy does have various time limits; it is not interminable. The first temporal boundary is implemented by agencies/clinics over concerns about the total amount of time that surrogates spend in reproduction and the physical impact of the total number of births (irrespective of process) on pregnancy success. I found agencies relying on physicians’ assessments, which vary by practitioner but which, nonetheless, place limits on the number of surrogacies with which women can engage (often based on the number of previous pregnancies).

Some agencies/clinics also have concerns about the total amount of time in reproductive work. They were troubled by surrogates wanting to engage in multiple journeys, which they feared indicated dubious money-driven motivations, and they therefore capped surrogacy to a certain number (in my experience, often three) to mitigate against this. As I discuss elsewhere (Jacobson, 2016), the US surrogacy industry is organized in such a way to try and avoid critique, including images of reproductive exploitation and a ‘baby factory’ system. Limiting surrogates’ number of involved surrogacies is one way to accomplish this. While these externally-imposed limits shaped the numbers of surrogacies enacted, the women in this study spoke most readily of self-imposed time limits.

Surrogates’ self-imposed temporal limits to third-party reproduction were related to surrogacy timing and family constraints. Coherent with the rule held by agencies/clinics, the women in this study shared that it was best to become a surrogate once ‘your own family was complete’. Their reasoning, however, was less about any confusion about emotional connections to ‘surro-babies’ and more about the potential for negative health outcomes from multiple pregnancies. Surrogates emphasized the possibilities they understood to exist in any pregnancy for unforeseen problems to arise that would result in serious injury or death, and the inability to carry subsequent pregnancies or to care for their existing children. Gillian Dorsey, a mother of three and one-time surrogate on her second journey, for example, asks potential surrogates to contemplate, ‘What if you lose your uterus? What if you die?’ Having been pregnant and experienced US maternity care previously, the women in my sample were cognizant of serious pregnancy and birth-related complications and did not want to place themselves in dangerous positions; this included engaging in surrogacy ‘too many times’ or at the ‘wrong time’.

Calculating the ‘wrong time’ for surrogacy involved considerations of the time commitment needed to engage in surrogacy and the resulting impact on family life. My interviews with both surrogates and surrogacy professionals revealed that if everything goes smoothly with a surrogacy journey, the process takes around 1 year. Most surrogates, however, invest more time into their journeys as delays are typical. Many indicated that more than one embryo transfer was needed, for example, to achieve pregnancy — with each transfer requiring a new ramp-up of medication to prepare the uterus and multiple doctor’s appointments. Sometimes changes were made in medical protocols, which took time to finalize. Sometimes new embryos needed to be created, often requiring new egg retrievals or the procurement of donated eggs. This all takes time. Among the 32 women in my sample, rare was the surrogate who had experienced no delay in any journey. With this time investment in mind, surrogates thought seriously about the timing of beginning a new journey and their families’ schedules.

Similar to there being a ‘correct time’ for reproduction on the biological clock, many women also told me they wanted to find a good time for surrogacy reproduction on the ART clock. For many women, the ‘best time’ to be a surrogate was one that aligned with their families’ lives, when there was ‘nothing major’ going on, which would allow them to dedicate themselves to often-delayed surrogacy journeys. They also considered the time of year in which the third trimester and birth would occur, noting the avoidance of summer, when it would be hot and their school-aged children would be home all day on summer break.

Women also considered the time impact of surrogacy on day-to-day family needs in ways similar to the negotiations that women make in ‘balancing’ paid employment with family (Jacobson, 2021). As the women in this study were caring for their young children during their surrogacy pregnancies, they thought about their children’s ages and the hands-on care required when deciding when to time surrogacy. Vanessa Moreno, for example, a mother of three and first-time surrogate, explained:

so after I had my third son and I knew my family was complete and I didn’t want any more kids, I had my tubes tied. I’m like, ‘We’re done’. I waited for [my third son] to get a little bit older and I told my husband, ‘I keep thinking about [surrogacy] and I think it’s time’.

According to Vanessa, a big part of it being ‘time’ was the fact that all three of her children were now in school and she would, therefore, have more time to dedicate to surrogacy. Like Vanessa, the women in this study wanted their children to be a bit older — no longer toddlers — and for them to be school-aged when they began surrogacy. Third-party reproduction was particularly challenging for women who had children not yet in school, not only because their children required more day-to-day hands-on care, but they had to make childcare arrangements when they went to medical appointments and surrogacy-related meetings. Having children in school for a good part of the day helped with this dilemma — but not entirely, as some appointments/meetings required travel or occurred during the summer or weekends, when children are not in school.

Women also considered their own age when contemplating surrogacy. Some expressed concerns about the wear and tear that third-party pregnancy imposes on their own bodies, and they did not want to wait too long to become surrogates. For example, Amber Castillo, a mother of two and one-time surrogate contemplating her second journey, shared:

I would rather do [another journey] sooner than later for a lot of different reasons. One of them mainly being physical. I think my body would recover physically and
from the pain; I’m worried about my figure! And also, I think pain-wise and all that good stuff, I think I would recover better being younger.

Amber had given birth three times, each by caesarean section, and although she told me she recovered well and was able to return to work quickly, she was worried that another pregnancy would become more difficult the longer she waited. Amber’s concerns about the impact on her body and her ability to recover were mirrored in my interviews with other women. Deidre Richards, for example, who was 34 years old at the time of her first surrogacy, let me know that she felt she was too old to pursue a second journey. She wanted to do so, telling me, ‘I would do it five more times if I could! I wish I was younger and could do it more!’ She felt like she could not do so, however, because of the stress on her body. Although physically, women can continue to be gestational surrogates well past menopause (as the uterus does not age to the same extent as oocytes), most of the surrogates in this study, like Deidre, saw there being a finite does not age to the same extent as oocytes), most of the surrogates in this study, like Deidre, saw there being a finite

Discussion

Interviews with US surrogates offer a unique window into decision making about pregnancy and the positioning of ART as a solution to infertility, postponed motherhood and the biological clock. Similar to the way that time shapes, constrains and problematizes reproduction for those dealing with infertility or delayed childbearing, coalescing in the concept of the biological clock, interviews with US gestational surrogates indicate that time plays an important role in third-party reproduction. My findings point to four important ART time-related issues: (i) women desiring to extend their own biological clocks via surrogacy; (ii) significant time being needed to achieve and sustain third-party pregnancy; (iii) women extending their total reproductive time via repeat surrogacy journeys; and (iv) temporal constraints to surrogacy reproduction regarding time of year, the day-to-day time effort, the number of surrogacy journeys, the total number of pregnancies, and surrogates’ age and the ages of their children. Each of these aspects point to important ways that reproductive desire and temporal extensions and constraints shape the labour of reproductive workers under the ART clock.

As ART becomes part of surrogates’ reproductive trajectories, important distinctions from previous reproductive events emerge. Although the women in this study report that a desire to extend their reproductive lives motivated them to engage in surrogacy, the move to third-party pregnancy was not a simple extension of their biological clocks. By entering surrogacy arrangements, the women in this study joined an industry centred on providing reproductive services to others. In doing so, surrogacy work represents a significant shift, not a simple jumpstart to their reproductive lives. These women enter a new physical, social and economic arrangement, one no longer dictated by their needs and their own biological clocks, but by the biological clocks and reproductive needs of others, operating within a commodified industry of networked professionals

(clinicians, agencies and attorneys) with industry rules and best practices.

By joining the ART industry, as I posit in ‘Labor of Love’ (Jacobson, 2016), these women become reproductive workers with their labour mirroring aspects of other forms of paid employment such as recruitment, monitoring and time investment. Although the national and local context varies, Rudrappa (2015: 96) found Indian surrogates being recruited out of garment industry work and into surrogacy labour, which they preferred as they found it ‘afford[ing] them greater control over their emotional, financial, and sexual lives’. None of the women in this study suspended paid employment for surrogacy. In fact, concerns were expressed by experienced surrogates and agency directors about women who thought such a move to full-time, long-term reproductive labour was possible. This highlights another temporal constraint of ART: third-party pregnancy is not work that can be sustained in the long term. Commercial surrogates, whether in the USA or in India (or elsewhere), are paid for a finite amount of time for gestating and bearing children for others; as such, they are both literally and figuratively ‘on’ an ‘ART clock’ that is ticking down.

The ‘ticking’ of the ART clock results, in part, from surrogates’ own and clinic rules regarding age and parity limits. The toll of pregnancy on the body and the time investment in third-party pregnancy were serious considerations for women adding third-party pregnancy to their reproductive trajectories. Although surrogates are not preparing for the arrival of a newborn in their home or anticipating the intense hands-on care needed for one — and they are being paid for their reproductive efforts — they can still find it challenging to incorporate pregnancy into their lives. They consider their abilities to attend medical appointments and travel given the care needs of their children. They often try and time surrogacy, especially the third trimester and birth, to occur during the school year to alleviate some of their care burdens and allow them to enjoy their journeys. They also noted concerns about the impact of pregnancy on their own bodies, given their age and the number of pregnancies they had experienced. The limits that surrogates self-impose — despite their expressed desire to engage in surrogacy ‘again and again’ — highlight the challenges that many women in the USA face when contemplating pregnancy, including how to balance the demands of the second shift, work, education and the intense physicality of pregnancy (Bulanda and Lippmann, 2012; Martin, 2020).

The temporal constraints experienced by surrogates are tightly interwoven with those of the intended parents with whom they work; as patient-clients run out of time on the ART clock, so too do surrogates (at least on that particular journey, with those particular intended parents). Surrogates’ reproductive work is performed on behalf of — and is therefore dependent upon — the ability (financially, emotionally, physically) of ART patient-clients to remain in the fertility clinic. Reproductive workers and ART patient-clients both face an intertwined ART clock that constrains their time and shapes their experiences with assisted reproduction.
Conclusion

Recent attention to the pandemic ‘baby bust’ illustrates how reproductive decision making and the timing of reproductive events in the USA, including delays in motherhood, involve not only ‘calculations about one’s ability and desire to conceive, gestate, birth and raise a child’ but strategies to ‘maximize social, economic and human capital’ in response to perceived barriers to parenthood, such as decreasing job security, high educational debt and a lack of universal childcare (Damaskes, 2011; Martin, 2017: 91; Martin, 2020: 2; Waldby and Cooper, 2008). The pandemic has exacerbated these issues, highlighting how paid work, childcare, K-12 schooling and higher education are organized in ways constraining or even antithetical to reproduction and the caring of young children (Briggs, 2017; Broster, 2021; McQuillan et al., 2008).

It will be interesting to see in the months and years ahead how the pandemic baby bust will be framed and any ‘solutions’ proposed. Since the 1970s, the ‘problem’ of the biological clock and delayed motherhood has been understood largely as one of individualized reproductive control, pitting women’s reproductive practices against the ‘natural’ (and therefore, immutable) reality of their own body’s biological limitations (Blair-Loy, 2009; McQuillan et al., 2008; Russo, 1979; Spain and Bianchi, 1996). This false notion of reproductive control, this individualized framing of the ‘problem’ of the biological clock, can be seen in the push (in the public imagination, if not in reality) for the ART solution to delayed motherhood (Sandelowski, 1991; Waldby and Cooper, 2008). ART is increasingly framed as an individualized solution to the ‘dilemma’ of the biological clock and ‘delayed motherhood’ for those able to afford these services (Daniluk et al., 2012; Wyndham et al., 2012); perhaps this trend will continue post-pandemic and the rates of third-party reproduction will remain on the rise. If so, as the public enters into new dialogues spurred on by the pandemic about delayed reproduction and inequalities in parenting, the reproductive experiences not only of ART patient-clients, but those of reproductive workers must be part of the larger calculations. In those larger discussions, the concept of the ART clock – including surrogates’ own reproductive desires and temporal constraints to participation in third-party pregnancy – may be helpful to contemplate the temporal limits not only of biology but of the ART ‘solution’.

Although ART has the potential to extend the temporal dimension of reproduction for patient-clients, allowing for the creation of their children beyond previously understood (and experienced) age limits for parenthood, the ART industry is dependent upon the participation of reproductive workers, which has temporal limits. Based on the experiences of US gestational surrogates, the concept of the ART clock proposed in this paper captures that unique temporal landscape of ART reproduction. As shown, the experiences of surrogates demonstrate important limits to ART.

Assisted reproduction in the USA is embedded in the fertility clinic, which has temporal demands in its operation. ART procedures occur within medical clinics and are, therefore, time-bound to office scheduling and medical/bureaucratic calendars (Thompson, 2005); in addition, surrogacy work needs to be completed at a particular time of life, for a particular time period, with preferred times of the year and at preferred family stages. The race against the ART clock, therefore, is not only one that attempts to meet the reproductive desires of patient-clients and their wonnowing biological clocks (often within the confines of dwindling economic and emotional reserves), but one that captures reproductive process desires of surrogates and the finite time available for women to engage in surrogacy. The ART clock captures a reality that ART is not an endlessly available option for reproduction as it is dependent upon reproductive workers whose work comes with temporal limits.

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References

Anderson, Elizabeth S., 1990. Is women’s labor a commodity? Philos. Public Affairs, 71–92.
Attali, Emmanuel, Yoge, Yariv, 2020. The impact of advanced maternal age on pregnancy outcome. Best Pract. Res. Clin. Obstetr. Gynaecol.
Becker, Gaylene, 2000. The Elusive Embryo: How Women and Men Approach New Reproductive Technologies. University of California Press, Berkeley, CA.
Bell, Ann V., 2014. Misconception: Social Class and Infertility in America. Rutgers University Press.
Bell, Ann V., 2016. The margins of medicalization: Diversity and context through the case of infertility. Social Sci. Med. 156, 39–46.
Berend, Zsuzsa, 2016. The Online World of Surrogacy. Berghahn, New York, Oxford.
Birenbaum-Carmelli, Daphna, Montebruno, Piero, 2019. Incidence of surrogacy in the USA and Israel and implications on women’s health: a quantitative comparison. J. Assist. Reprod. Genet. 36 (12), 2459–2469.
Blair-Loy, Mary, 2009. Competing Devotions: Career and Family Among Women Executives. Harvard University Press.
Boris, Eileen, Parreñas, Rachel Salazar, 2010. Intimate Labors: Cultures, Technologies, and the Politics of Care. Stanford University Press.
Brase, Gary L., Brase, Sandra L., 2012. Emotional regulation of fertility decision making: What is the nature and structure of ‘baby fever’? Emotion 12 (5), 1141.
Bratti, Massimiliano, Cavalli, Laura, 2014. Delayed first birth and new mothers’ labor market outcomes: Evidence from biological fertility shocks. Eur. J. Populat. 30 (1), 35–63.
Briggs, Laura, 2017. How All Politics Became Reproductive Politics: From Welfare Reform to Foreclosure to Trump. University of California Press.
Brotzer, Alice, 2021. Coronavirus Hasn’t Lead to the Baby Boom that was Anticipated, According to a New Study. Forbes.
Bulanda, Ronald E., Lippmann, Stephen, 2012. The timing of childbirth and family-to-work conflict. Sociol. Focus 45 (3), 185–202.
Casper, Lynne M., Blanch, Suzanne M., 2001. Continuity and Change in the American Family. Sage Publications.

CDC, 2019. 2017 Assisted Reproductive Technology National Summary Report. CDC, Atlanta, GA.

Clarke, Adele E., Shim, Janet K., Mamo, Laura, Fosket, Jennifer Ruth, Fishman, Jennifer R., 2003. Biomedicalization: Technoscientific transformations of health, illness, and US biomedicine. Am. Sociol. Rev., 161–194

Conrad, Peter, 1992. Medicalization and social control. Annu. Rev. Sociol. 18 (1), 209–232.

Conrad, Peter, Leiter, Valerie, 2004. Medicalization, markets and consumers. J. Health Social Behav., 158–176

Cooper, Melinda, Wdalby, Catherine, 2014. Clinical Labor: Tissue Donors and Research Subjects in the Global Biobconomy. Duke University Press, Durham, NC.

Corea, Gina, 1985. The Mother Machine. Harper and Row, New York.

Damaske, Sarah, 2011. For the Family?: How Class and Gender Shape Women’s Work. Oxford University Press.

Daniluk, Judith C., Koert, Emily, Cheung, Anthony, 2012. Childless women’s knowledge of fertility and assisted human reproduction: identifying the gaps. Fertil. Steril. 97 (2), 420–426

Deomampo, Daisy, 2013. Transnational surrogacy in India: Interrogating power and women’s agency. Front.: J. Women Stud. 34 (3), 167–188.

Deomampo, Daisy, 2016. Transnational Reproduction: Race, Kinship, and Commercial Surrogacy in India, vol. 1:. NYU Press.

Dockterman, Eliana, 2020. Women Are Deciding not to have Babies because of the Pandemic. That’s Bad for All of Us.

Earle, Sarah, Letherby, Gayle, 2007. Conceiving time? Women who are or do not conceive. Sociol. Health Illn. 29 (2), 233–250.

Friese, Carrie, Becker, Gay, Nachtigall, Robert D., 2006. Rethinking the biological clock: eleventh-hour mums, miracle moms and meanings of age-related infertility. Soc. Sci. Med. 63 (6), 1550–1560.

Gallagher, James, 2020. Fertility rate: ‘Jaw-dropping’ global crash in children being born. BBC News.

Gerson, Kathleen, Damaske, Sarah, 2020. The Science and Art of Medicalization, intent, and ambiguity in the definition of infertility. Soc. Sci. Med. 74 (11), 1745–1753.

Greil, Arthur L., McQuillan, Julia, 2010. ‘Trying’ times: Medicalization, intent, and ambiguity in the definition of infertility. Med. Anthropol. Q. 24 (2), 137–156.

Greil, Arthur, McQuillan, Julia, Slauson-Blevins, Kathleen, 2011. The social construction of infertility. Sociol. Compass 5 (8), 736–746.

Harwood, Carey, 2007. The Infertility Treadmill: Feminist Ethics, Personal Choice, and the Use of Reproductive Technologies. The University of North Carolina Press, Chapel Hill, North Carolina.

Hertz, Rosanna, 2006. Single by Chance, Mothers by Choice: How Women are Choosing Parenthood Without Marriage and Creating the New American Family. Oxford University Press.

Hovav, April, 2019. Producing moral palatability in the Mexican surrogacy market. Gender Society 33 (2), 273–295.

Inhorn, Marcia C., 2015. Cosmopolitan Conceptions: IVF Sojourns in Global. Duke University Press, Dubai.

Jensen, Robin E., Martins, Nicole, Parks, Melissa M., 2018. Public perception of female fertility: initial fertility, peak fertility, and age-related infertility among US adults. Arch. Sex. Behav. 47 (5), 1507–1516.

Kearney, Melissa S., Monday, P.L., 2020. Half a Million Fewer Children? The Coming COVID Baby Bust. Brookings Insti. Rep.

Koropeckyj-Cox, Tanya, Pendell, Gretchen, 2007. Attitudes about childlessness in the United States: Correlates of positive, neutral, and negative responses. J. Fam. Issues 28 (8), 1054–1082.

Kudesia, Rashmi, Chernyak, Elizabeth, Macey, Beth, 2017. Low fertility awareness in United States reproductive-aged women and medical trainees: creation and validation of the Fertility & Infertility Treatment Knowledge Score (FIT-KS). Fertil. Steril. 108 (4), 711–717.

Law, Caroline, 2020. Biologically infallible? Men’s views on male age-related fertility decline and sperm freezing. Sociol. Health Illn.

Lewin, Tamar, 2014. Coming to US for Baby, and Womb to Carry It. N.Y. Times.

Li, Norman P., Patel, Lily, Balleit, Daniel, Tov, William, Scollon, Christie N., 2011. The incompatibility of materialism and the desire for children: Psychological insights into the fertility discrepancy among modern countries. Soc. Indic. Res. 101 (3), 391–404.

Majumdar, Anindita, 2017. Transnational Commercial Surrogacy and the (un) Making of Kin in India. Oxford University Press.

Majumdar, Anindita, 2018. ARTs and the problematic conceptualisation of declining reproduction. Indian J. Med. Ethics 3 (2), 119–124.

Markens, Susan, 2007. Surrogate Motherhood and the Politics of Reproduction. Univ of California Press.

Markens, Susan, 2012. The global reproductive health market: US media framings and public discourses about transnational surrogacy. Soc. Sci. Med. 74 (11), 1745–1753.

Martin, Lauren Jade, 2010. Anticipating infertility: Egg freezing, genetic preservation, and risk. Gender Society 24 (4), 526–545.

Martin, Lauren Jade, 2017. Pushing for the perfect time: Social and biological fertility. Women’s Stud. Int. Forum 62, 91–98.

Martin, Lauren Jade, 2020. Delaying, debating and declining motherhood. Cult. Health Sex., 1–16

McQuillan, Julia, Greil, Arthur L., Shreffler, Karina M., Tichenor, Veronica, 2008. The importance of motherhood among women in the contemporary United States. Gender Society 22 (4), 477–496.

Pande, Amrita, 2009. Not an ‘angel’, not a ‘whore’ surrogates as ‘dirty’ workers in India. Indian J. Gender Stud. 16 (2), 141–173.

Pande, Amrita, 2011. Transnational commercial surrogacy in India: gifts for global sisters? Reprod. Biomed. Online 23 (5), 618–625.

Practice Committee of the American Society for Reproductive, Medicine, and Technology Practice Committee of the Society for Assisted Reproductive, 2017. Recommendations for practices utilizing gestational carriers: a committee opinion. Fertil. Steril. 107 (2), e3–e10.

Ragone, Helena, 1994. Surrogate Motherhood: Conception in the Heart. Westview Press, Boulder.

Richards, Sarah Elizabeth, 2014. Should a woman be allowed to hire a surrogate because she fears pregnancy will hurt her career? Elle https://www.elle.com/life-love/a14424/birth-rights.

Riggs, Damien W., Due, Clemence, 2019. A Critical Approach to Surrogacy: Reproductive Desires and Demands. Routledge.

Roberts, Dorothy E., 1997. Killing the Black Body: Race, Reproduction, and the Meaning of Liberty. Pantheon Books.

Rothman, Barbara Katz, 1989. Recreating the New American Family. Oxford University Press.

Rudrappa, Sharmila, 2012. Working India’s reproduction assembly line: surrogacy and reproductive rights. Western Human. Rev. 66 (3), 77–102.
