Beyond the petri dish:

Potentiality in assisted conception in South Africa

Tessa Moll

Thesis Presented for the Degree of DOCTOR OF PHILOSOPHY

in the Department of Social Anthropology
School of African & Gender Studies, Anthropology and Linguistics

UNIVERSITY OF CAPE TOWN January 2020

Supervisor: Professor Fiona Ross

Declaration

1. I know that plagiarism is wrong. Plagiarism is to use another's work and pretend that it is one's own.

2. I have used the ...UCT-Harvard. convention for citation and referencing. Each contribution to, and quotation in, this dissertation from the work(s) of other people has been attributed, and has been cited and referenced. Any section taken from an internet source has been referenced to that source.

3. This dissertation is my own work, and is in my own words (except where I have attributed it to others).

4. I have not allowed, and will not allow, anyone to copy my work with the intention of passing it off as his or her own work.

5. I acknowledge that copying someone else's assignment or essay, or part of it, is wrong, and declare that this is my own work.

Signed by candidate

Tessa Moll

24 January 2020

Acknowledgements

I wish to acknowledge and thank the Mellon-Funded First Thousand Days of Life project and the Oppenheimer Memorial Trust for the financial assistance to make this project possible. Portions of Chapter Six appear in *Medical Anthropology* (Moll, 2019).

This research would not have been possible without the assistance of several organisations and individuals. I wish to thank the fertility physicians, embryologists, nursing sisters and egg donor agencies that gave me their time and allowed me to follow them in their work. I also wish to thank the patients and egg donors who were generous with their time and stories. Without them, I would have no thesis, and my appreciation is vast.

For their support during the long process of fieldwork and writing up, I wish to thank my colleagues and friends, both at UCT and beyond, the First Thousand Days Research Group, and namely Miriam Waltz, Lawrence van der Merwe, Yusra Price, Jennifer Rogers, Nicole Ferreira, Nicole Daniels, Nanna Schneiderman, Michelle Pentecost, Kathleen McDougall, Carina Truyts, Ziyanda Majombozi, A.J. Bauer, and SherriLynn Colby-Bottel. In various ways, all of you have made this thesis possible.

My supervisor Professor Fiona Ross has been unwavering in her support, kindness, empathy, and guidance throughout this process. Fiona, I cannot thank you enough for your supervision, mentorship, and friendship. Our work together has proven to be a delightful, fulfilling, and challenging journey, and one where you have always modelled the kind of academic and mentor that I would like to be one day.

Finally, with many thanks and love to my dear friends: Leah Shah, Kelsey Draper, Laura Huss, Katherine Austin-Evelyn, Jeanne Hefez, Lars Overland, Nik Berning, Zandi Ngoma, Pabi Malingoane, Desire Gird, and Damien Schumann. Love to my dearest family: Mom, Dad, Kate, Nick and my darling nieces and nephews. And, of course, to Rasmus, my partner in life who has supported me with kindness, love, humour, and a cup of coffee through every step of this process, and who shapes and stimulates my thinking every day.

Contents

Abstract

Research in assisted conception technologies has examined how technologies open up potential trajectories, futures, and family arrangements, yet remain shaped and embedded within local histories and politics (Franklin, 1997, 2003; Inhorn, 2003; Thompson, 2005; Roberts, 2012). Embryos (Franklin, 2006a), sex cells such as eggs and sperm (Ariza, 2018), and IVF more generally (Inhorn, 2003; Simpson, 2013), offer particular potential futures but also threaten existing social orders. In this thesis, I present an ethnographic analysis of potentiality in IVF in South Africa through tracing sites and processes to apprehend, assess, and manage potential. Potentiality invokes desires and fears about the future while inviting attempts to render the future knowable and manageable (Taussig, Hoeyer, & Helmreich, 2013). Drawing on 14 months of multi-sited ethnographic research in fertility clinics and egg donor agencies in urban South Africa, I draw out the political, affective and temporal registers of potentiality as they materialise in concrete instances of reproductive medicine that is entangled within a context of capitalist biomedicine. Here, I argue that while biomedical knowledge systems frame certain objects, times, and futures as having potential, it simultaneously negates and neglects other kinds of futures, an attribute I describe as "scoping." While ARTs and the social "facts" they reproduce are imaged as global and mobile objects, they are deeply entangled within the terrain — historical, political, economic — in which they become materialised. I argue that while IVF has the potential to disrupt "established" orders, intensive effort, which I theorize as "curature," works to manage and domesticate IVF's potential, reinforcing certain shapes of family, gender, morality, race and kinship arrangements. I argue that examining potentiality in IVF in South Africa reveals the politics — namely political-economic and racialised — and histories that shape reproductive technologies and potentialities.

Abbreviations

The following list includes abbreviations and terms used throughout this dissertation

AI	Artificial insemination, used interchangeably in practice with IUI
AID	Artificial insemination with donor
ARTs	Assisted reproductive technologies
ET	Embryo transfer
ICSI	Intracytoplasmic sperm injection
IFAASA	Infertility Awareness Association of South Africa, a not-for-profit organisation
IUI	Intrauterine insemination, used interchangeably in practice with AI
IVF	In vitro fertilization
NGK	*Nederduitse Gereformeerde Kerk*, the Dutch Reformed Church in South Africa
OHSS	Ovarian hyperstimulation syndrome
PGD	Preimplantation genetic diagnosis
PGS	Preimplantation genetic screening
PR	Pregnancy rate
SARA	South African Registry for Assisted Reproductive Techniques
SASREG	South African Society for Reproductive Medicine and Gynaecological Endoscopy, the professional society for fertility physicians and more recently IVF nursing sisters and embryologists
WHO	World Health Organisation

Tables and Figures

Figure 1. The team at Tygerberg Hospital in Bellville near Cape Town. Their work resulted in the first test tube baby from South Africa. Photo courtesy of Anzette Borcherds.

Figure 2. The list of patients I interviewed during fieldwork. The majority were women, South African, married, and in white-collar professions. Couples are blocked together by colour.

Figure 3. List of the egg donors I interviewed.

Figure 4. Map showing the distribution of fertility clinics in South Africa. For scale, the distance between Cape Town (lower right) and Port Elizabeth (lower centre) is 750km, or roughly 8 1/2 hours of driving.

Figure 5. Image from a South African fertility clinic showing clinical pregnancy rate per embryo transfer by the age of the women producing oocytes (age of intended mother or egg donor), under a page called "Success rates." Image taken 13 March 2019.

Figure 6. The overview of statistics from the SARA 2014 report (SASREG, 2017: 13). PR/Aspiration refers to the clinical pregnancy rate over the total number of aspirations; PR/ET is the clinical pregnancy rate over the total number of embryo transfers.

Figure 7. The two pie charts above come from the SARA report 2014 (SASREG 2017). They show the outcomes of clinical pregnancies (those IVF cycles that became registered as clinical pregnancies). The left is for IVF cycles; the right for ICSI cycles. Both have significant recordings of "unknown outcome."

Figure 8. Table from the 2014 SARA showing pregnancy by age, where "age" refers to "egg age" (SASREG, 2017).

Figure 9. This graph (Smith et al. 2015) shows the likelihood of a live birth by the number of cycles, and also divided by age groups, and whether the oocytes were "own" or donor. This may seem to contradict the previous section where I stated that it was the age of the egg that matters. However, this graph only shows the ages of "own oocytes" above and below 40. Donors are, generally speaking, much younger than IVF patients. In my sample, the average donor age was 22 in contrast to patients, who were typically in their 30s. This is not the exact graph that Dr Webb showed to Deena, but his showed similar information in a similar format. This graph is not specific to South Africa.

Figure 10. A picture hanging in a fertility clinic office. Translated from Afrikaans, it reads: "Dream, dreamer, dream seeker! Ask and you will receive! There is hope!"

Figure 11. A visual diagram of the elements that comprise morphology grading under the Gardner and Schoolcraft (1999) system. The elements include inner cell mass, trophectoderm, and the degree of expansion and hatching status (from Rehman et al., 2007). This system was used in the labs I observed.

Figure 12. This image went "viral" during my fieldwork and was shared on the Facebook pages of several of the South African clinics, patient advocacy groups, and egg donor agencies I followed. The image originates in the United States and was originally shared on the Facebook page of the mother's fertility clinic (Staufenberg, 2015).

Figure 13. An image shared on Facebook by a Johannesburg-based fertility clinic. Published 12 March 2017.

Figure 14. This is a Twitter advertisement for a local egg donor agency. The woman in the image, ostensibly a donor, is dressed as an angel, reflecting the sought-after depiction of donors as "good girls" (see also Pande & Moll, 2018).

Figure 15. This is a Facebook advertisement from a local sperm bank.

Figure 16. This is a paper flyer from a local agency advertising for egg donors.

Figure 17. Demographics from four donor agencies that have online databases. Retrieved January 2019.

Figure 18. Options for race group from an online application form for potential donors.

Figure 19. Sample from a sperm donor application form.

Chapter One:

Researching potentiality: Introduction and research methodology

Valerie, an embryologist at a Johannesburg fertility clinic, showed me a simple slide with a drop of semen sample on it. I peeked through the microscope at the dazzling, jumping, wriggling sperm below; tails frantically twitching, heads moving to and fro on the illuminated plate. But to Valerie's expert eye, this was a poor sample — the sperm were not moving with the "intention" they should nor with the verve. They were slow. "Oh shame!" she said, "It's trying really hard." Taking notes on the process, I mentioned off-handedly and jokingly that I should get my partner tested. "We should figure out what I'm dealing with here!" I said half-jokingly. Valerie looked up and said, "Yes of course! You should, and I'll do it," she offered. She explained what testing would involve: At 6:15am, the time I left our flat for the clinic, my partner would have to wake up and "provide a sample" (to use the clinic's turn of phrase) for me to race to the clinic (a 45-minute drive), keeping the jar holding the "sample" warm between my legs as I drove. Suddenly, I realised that this was a serious offer! Valerie was willing to carry out a free analysis on a sample of my husband's semen to see . . . ? To see what?

What would she see? A semen analysis tests for several things — morphology, motility, count, fructose levels, antibodies, and volume. For the embryologists and the physicians, these elements represent the sperm, the seminal fluid, and its potential to fulfil the expectations of fertilizing an egg and producing a live child. So what could Valerie's test not see? It could not see whether or not Rasmus wanted a child, or whether or not *we* wanted a child. It could not see our ambivalence on this issue. It could not see how that ambivalence gave way, years later, to the desire for a child. It could not see my subsequent anxiety about possible infertility; how, after having spent four years in the world of infertility, *in vitro* fertilization (IVF), and assisted reproductive technologies, the idea of conceiving a healthy, live child without technological or pharmacological intervention now seems nearly impossible. But if Valerie's test could see some things, what then could we know? Could we know that in order for us to have a child, we too would have to go through IVF? What versions of the future would the test accelerate or initiate that were previously latent? What temporal trajectories would it open up?

These questions — imaginations of futures, anxieties from the past, the impetus to calculate in reaction to uncertainty, and the way that "facts" thrust one into particular anticipatory regimes — are at the heart of this research on assisted reproductive technologies (ARTs) in South Africa. ARTs, from IVF to donor sperm, have long ignited the imaginations of scientists and publics alike for their potential to create dystopian visions of "designer babies," as much as for their potential to "restore" reproductive capacity and create "miracle babies," depicted as the rosy-cheeked[1] "embodiment of futurity" (Edelman 2004: 10) Sperm analysis tests, detached egg and sperm cells (or gametes), and frozen embryos can be similarly characterized as sites and objects of potentiality. Potential, as a hidden or latent force, the quality of plasticity, or a possible trajectory or choice (Taussig, Hoeyer, & Helmreich, 2013), invokes the anxiety and expectation of the unknown, unpredictable, and possible disorder of the future; yet, it simultaneously invites an attempt to render these futures knowable through probability, statistics, and prognosis.

---

[1] This is an intentionally racialized image.

In this dissertation, I engage in an ethnographic and empirical study tracing sites of potentiality in the context of IVF in South Africa. What systems of knowledge, technologies, and assessment methods (and their various histories) are brought to bear on the question of potentialities? How do relations to certain tissues (eggs, sperm, embryos) change in relation to their apprehended and imagined potentialities? What socio-cultural forms (e.g. gender, kinship, and race) were these technologies putting at risk— and how were they enduring and rendered stable? And finally, what dopes IVF tell us about "older" social structures that shaped potentiality — race, class, gender, for example? I explore and situate the knowledge systems that contribute to the "naming and framing" of potentiality that, while operating under the seeming disengaged auspices of scientific truth, ultimately colludes in the commodification of reproduction. Reproduction via assisted conception remains deeply stratified not only along racial and class lines in regard to access to treatment, but, through the gatekeeping and mediation of clinic and medical staff. IVF usage remains shaped by latent histories and ideologies of race and family and as such require considerable management as IVF renders such ideologies susceptible. In sum, while ARTs and the social "facts" they reproduce are imaged as global and mobile objects, they are deeply entangled within the terrain — historical, political, economic — in which they operate.

Futures in the present and hauntings of the past: potentiality

By studying IVF and potentiality I aim to contribute both ethnographically and theoretically. In the first instance, it contributes to an already well established body of work from medical anthropology, science and technology studies, and feminist social science on the IVF —the local moral worlds that shape its usage, the political hierarchies that inflect its mobility, and the lived experiences and lifeworlds of those engaging with this technology in the pursuit of having a certain kind of family (for a small selection of monographs, see Inhorn 1994; Franklin 1997; Kahn 2000; Thompson 2005; Roberts

2012; Bharadwaj 2016). How and why is the South African context unique? How does studying IVF in this context contribute to an already crowded area of anthropological research. These question I take up in Chapter 2.

In the second instance, I aim to contribute theoretically to a an ethnographic study of potentiality, what scholars say is a key concept for the postgenomic moment (Taussig, Hoeyer, and Helmreich 2013). For one, studying IVF through the lens of potentiality puts firmly in view the politics of reproduction. This dissertation contributes to ongoing work on the politics of potentiality (Pentecost, 2018) in South Africa, towards an understanding the systems of power that shape, constrain, and foster certain reproductive futures. Secondly, studying potentiality through the lens of IVF examines the material and discursive articulations of a concept. How does a concept actually unfold or "work"? Researching a concept may be quite an odd thing in anthropology; often this is done in the realm of history, for instance, using Hacking's (2002) method of "historical ontology" through which one unpacks specific matrices of power in which ideas emerged. He argues that "present ideas have memories… previous trajectory and uses (2002:8). While they have histories, concepts are also always constantly changing, as we speak and perhaps "because you speak" (2002: 9). Hacking writes:

> A concept is nothing other than a word in its sites. That means attending to a variety of types of sites: the sentences in which the word is actually (not potentially) used, those who speak those sentences, with what authority, in what institutional settings, in order to influence whom, with what consequences for the speakers (Hacking, 2002: 17).

This dissertation seeks to understand the sites where the concept of potentiality is articulated in assisted reproductive technologies.

Potentiality, write Taussig, Hoeyer and Helmreich (2013), is a ubiquitous idiom in contemporary forms of biomedicine and biotechnology that is ever-oriented to a future of *life* (see also DiCaglio, 2016). The authors describe it as, on one hand, a "hopeful idiom" oriented towards an improved life produced by new biomedical interventions. It shares theorizing on risk, in that potentiality orients towards a future that may or may not be, and further, kindles a moral claim to act. Thus potentiality "interacts with utopian and dystopian visions of the future of humanness framed as much in terms of limiting as realizing potentials" (2013:S4). Viewing life as potential frames it as available for action and intervention (Colebrook, 2008; Taussig, Hoeyer, & Helmreich, 2013).

Within contemporary biomedicine, the authors argue, potentiality has returned in a strange way back to "nature," in that "natural" elements, such as genes, DNA and stem cells, are viewed to *innately* have potential, but require intervention — biomedicine, for instance, or the "helping hand" of technology (Franklin, 1997) — to be fully realised. Biomedicine, therefore, frames "nature" as in need of "culture" for its potentiality to be fully realised. "Presented as insights into 'nature', claims about potential operate 'as vehicles for politics'," argue Taussig, Hoeyer and Helmreich (2013:S5). Framing something as "natural," of course, reorients ethics. However, "naming and framing" something as potential, as something "natural" simply in need of a helping hand, compels moral obligations to act towards that realization, or to stave off an unwanted future. In this way, potentiality operates as a scope, a way of focusing and framing certain things (that foster wanted futures). Any framing, however, also implies certain things remain out of the frame. What does an articulation of potentiality open up as a space for intervention and surveillance; yet what does it also invisibilize, conceal, or obscure? Further to this, how does something become "named and framed" as potential? Knowledge systems involved in assessment, calculation, and management become embroiled in anticipatory regimes and capital forms. In the case of embryos, systems of knowledge, institutions, politics and publics frame the potentiality of embryos to produce different ethical trajectories. This includes, for instance, an ethics of life when embryos are imagined as having a biographical trajectory, or, as Roberts (2008) argues a kin trajectory. Roberts demonstrates that in Ecuador, viewing frozen embryos as potential kin (in contrast to US conceptions of embryos as potential life), instantiated different ethical obligations that precluded their freezing and thus circulation. This is in contrast to empirical work in Denmark, where Svendsen (2011) traces the articulation of certain embryos as "blank," that is, removing them from potential biographical or kin relationships. Assessments of embryos, via morphology grading practices or pre-implantation genetic screening,[2] changes the trajectory of embryos. Scientific practices in turn changes embryos from potential kin or life to potential help for the larger society via stem cell research (Svendsen, 2011). Assessment and screening become technologies of the politics of potentiality to determine the varying trajectories of embryos. In everyday life in Denmark, framed by widespread public health and biomedical knowledge, Offersen et al's (2016) explore the ways that bodily sensations invoke imminent risks of future ill health or become normalized into everyday aches and pains. For elder Danes, what is a sensation or what is a symptom of illness? Everyday weighing of illness potentiality takes place within a context "contingent upon local moral worlds," (Offersen et al. 2016:39), that is a grander assessment of what matters for these Danes in terms of health, bodily mobility, and its impact on social relations.

Using potential as a framing for diverse possible futures opens spaces for intervention. As a result, potentiality is often linked to the growing commodification and capitalization of biological tissues and processes. Conceived as forms of "biocapital" (Sunder Rajan, 2007), "bioprospecting" (Franklin, 2006b), or the production of "biovalue" (Waldby, 2002), scholars of the bio-economy have investigated the ways that novel biological forms and technologies and capital formations intersect with and fuel one another, such as the growth in personalized medicine, patenting of biological forms, and biobanking, in addition to reproductive medicine (Helmreich, 2008). Studying IVF through the lens of potentiality is a good fit, for, as Adams, Murphy and Clarke argue, "Reproduction as a process that is both aggregate and increasingly parsed at micrological levels, is particularly territorialized

---

[2] These are three of the many embryo "grading" methods *in vitro* to decide on "the best" to transfer. Chapter 4 looks at these methods and processes in detail.

through anticipatory logics" (2009:252). Indeed, Charis Thompson refers to embryos in ARTs as a kind of "promissory capital," where "its value stems from its life-creating potential" (2005:255). The life-generating potential of ART and human tissues produced via IVF render them anticipatory regimes which offer increasing and novel openings for biomedical intervention. Such intervention creates new markets for redressing infertility, and as such, create opportunities for expanding capitalism's reach both deep (into the body) and wide (across infertile populations).

Potentiality is thus a limited scope of possibilities shaped by both the present and the past. In theorising the potentiality of violence, anthropologist Henrik Vigh (2012) describes potentiality as a "quasi-present feature of social life," and describes how people "orient themselves toward the present state that is pregnant with negative processes, forces, and figures" (Vigh, 2012:94). Anticipation, Adams, Murphy and Clarke say, has multiple dimensions, one of which the authors describe as "abduction," the to and fro between different temporal states of past, present, and future that courses of action are taken (Adams, Murphy & Clarke, 2009). Geographer Andrew Baldwin (2012) explains this as an absent presence, using the example of building a dam in the present in pre-emption of a flood in the future; the flood is absent but made a presence in the material condition of the present through the dam. Potentiality is temporal, in that it is oriented towards the future and in relation to the past. Ariza (2018) reads potentiality in ARTs as both positive and negative. They make available different kinds of futures, "restore" lost fertility, and produce new generations, but also have a "negative potentiality," brought upon by the technologies and their ability to disconnect and disentangle areas of life that were accepted as "natural," such as kinship. Ariza's formulation of "bad potentiality" can be read in terms of the ideas of risk and hauntings from the past that potentiality invokes. In Sahra Gibbon's (2013:S111) research on breast cancer genetics in Brazil, she argues that potentiality of biology is malleable and "plastic". That is, in context of Brazillian social imaginaries of the particularity of national racial mixtures, "the articulated potential of genetic ancestry lies in the way it can be decoupled from an emphasis in transnational research on "ethnicity or population difference" and reattached to a Brazilian discourse of *mestiçagem*" (Gibbon 2013: S111, italics in original). Further, Tine Gammeltoft (2013), in studying sonogram use in Vietnam, argues that national anxieties related to the long-term impact of Agent Orange materialize in women's anxieties about their sonograms: national hauntings scale to individual fears. Potentiality materializes within certain affective states. Hope, fear, anxiety, dread — these affective registers become instantiated in relation to futures, pasts, and present calculations.

What is the benefit of studying potentiality of IVF in particular? If we take the notion that potentiality is a key term in the post-genomic moment, then IVF, which instantiated "a new kind of biological kinship with technology" (Franklin 2013: 31), is certainly among the establishing technologies for that same moment. In looking back over the last 30 years, Franklin argues that *in vitro* fertilization has become a "platform, or stem technology" (2013: 31) from which myriad technologies, such as stem cells, cloning, and genetic testing, have emerged. Despite, and because of, its increasingly normalization, she argues, IVF remains a "curious" technology of reproduction. While IVF is seemingly established in South Africa as an ordinary mode to conception, its presence and application still triggers disquiet and discomfort. IVF remains a foundational, an ordinary, and a quintessential technology that throws into question our relationship to pasts and futures, technology and biology, and science and capital.

What is IVF? Some terminology

Assisted reproductive technologies (ARTs[3]) is a catch-all term to encompass a variety of techniques to establish a pregnancy (Zegers-Hochschild et al. 2009). Social scientists have largely adopted this

---

[3] I include this term in particular because its acronym is most often associated in South Africa with antiretroviral therapies.

term and at times use it interchangeably with the broader new reproductive technologies (NRTs) (see Inhorn, 2003; Levine, 2008; Cromer, 2009), which additionally includes amniocentesis (Rapp, 1999) and ultrasound (Müller-Rockstroh, 2012).

In this thesis, I am focusing on IVF in South Africa. *In vitro* fertilisation (IVF) refers to fertilisation *in glass*, that is, in a petri dish. The term, while describing a singular moment (that is, the moment of fertilisation), colloquially refers to the several-weeks long medical and technological process. Simply (and though there are numerous amendments made to patient protocols), female patients have daily hormone injections for roughly 10 days to stimulate the ovarian follicles,[4] resulting in the overproduction of oocytes. Doctors aspirate oocytes, and thereafter they are kept in the embryology lab and fertilised with sperm. The World Health Organisation's official glossary of terms refers to IVF as "extracorporeal fertilisation" (Zegers-Hochschild et al. 2009: 1522). The result of fertilisation, if successful, is an embryo, which is then held in an incubator to develop and grow between three and six days. The resultant embryo may then be transferred to the uterus, in a process known as embryo transfer. Those not transferred are either cryogenically frozen or treated as medical waste[5]. Ten days to two weeks after embryo transfer, a blood test reveals whether the embryo implanted successfully, leading to pregnancy, or not. Children of IVF are colloquially referred to as "test-tube babies," particularly in the popular media.

There are a number of variations on the "standard" IVF procedure that I have described above. Intracytoplasmic sperm injection, or ICSI, emerged in the early 1990s as a variation on IVF, involving the manual injection of sperm into the oocyte (Zegers-Hochschild et al. 2009). This is in

---

[4] Follicles are the fluid-filled sacs in the ovaries that contain oocytes. Doctors monitor follicle development — their number and size — during hormonal stimulation and in the lead up to aspiration. To yield a certain number of eggs, a certain number of follicles at a certain size is needed at the time of aspiration.

[5] The National Health Act regulations allow for the use of fertilized embryos in stem cell research, but require ministerial permission for their use (Pepper & Slabbert 2015). Thus, unlike the situation in India, where the fertility industry is key for the movement of embryos to stem cell research (Bharadwaj 2014), South Africa fertility clinics in my observation are not linked to stem cell research.

contrast to “traditional” IVF, where sperm and oocytes are placed together in a petri dish and fertilisation is allowed to occur. The ICSI procedure was invented and intended for treatment of male-factor infertility (Fishel, Dowell, & Thornton, 2000). Marcia Inhorn (2003) found that its availability in IVF clinics in Egypt dramatically increased the number of patients coming for treatment for male-factor infertility. Today, ICSI is the more common procedure in fertility clinics, used twice as often as IVF usage in South Africa (South African Society for Reproductive Medicine and Gynaecological Endoscopy [SASREG], 2017:14-18).

Both IVF and ICSI may incorporate a number of other procedures, such as third-party gametes. Gametes, referring to the reproductive or sex cells of the male and female (namely sperm and eggs, or oocytes), can come from the so-called “intended” parents;[6] or they may come from “donors,” either anonymous or known individuals who contribute gametes but who are not considered the “parents.” Surrogates refer to women who, through contractual agreement in South Africa, gestate offspring for other “intended” parents (Zegers-Hochschild et al. 2009).

Test-tube histories

Here, I sketch a brief history of IVF in South Africa (see Chapter 7 for a detailed history of ART legislation), while paying attention to the ways histories of technological achievements can often replicate colonial imaginaries of scientific proficiency and the global mobility of technology. In the *Reproductive BioMedicine and Society Online* special issue on IVF histories, Sarah Franklin and Marcia Inhorn (2016) argue that, by-and-large, the history of IVF and its diffusion to multiple countries

---

[6] “Intended parents” has become the common term, in both scientific and social science literature, for the couple or individual that would be the parents of the potential child. This applies in cases of third-party gamete donation and surrogacy. Marilyn Strathern traces this idea from the legal wrangling over parenthood in surrogacy cases in the United States, where the courts found that “the child would not be born but for the efforts of the intended parents, then the intending parents were the first cause or prime movers of the procreative relationship (parenthood established through the anticipation of it)” (Strathern, 1996:20).

across the globe has yet to be written. Franklin has attempted a partial version in her 2013 book, where she uses the metaphor of the "frontier" to describe the evolution and circulation of scientific knowledge of IVF as both fortuitous and haphazard, and yet also extending ideologies of scientific progress in the wake of their global movement (Franklin, 2013). The special issue of IVF histories, from India, Mexico, Ecuador, and more, serves to provide a patchwork of different "repronational histories" (Franklin & Inhorn, 2016:4), a collection of specific events, such as clinics, controversies, press coverage, and court cases, that have shaped IVF provision.

Anthropologist Sandra Bärnreuther (2015), who studies IVF in India, argues that the controversy over the legitimacy of Dr Subhas Mukherjee's claim to facilitating the arrival of the second test tube baby globally demonstrates the ways IVF historiography has often replicated the diffusionist model of scientific globalisation, whereby innovations in the Global North are "vernacularized" (Simpson, 2013) or "indigenized" (Sahlins, 1999) in Global South localities. This, she argues, "carries the danger of neglecting to interrogate the segmentation of the world into innovators on the one hand and imitators or reinterpreters on the other" (Bärnreuther, 2015:75). The story of Dr Mukherjee reveals the global power relations and spatialities of knowledge production as dynamics that (de)legitimise certain knowledge claims. In sum, IVF histories are not only about certain scientific markers and achievements, but the specific infrastructural, cultural, political and religious forces that shape the potentialities of IVF in a particular national context and also the implications for how these histories are told. Among the ways of framing IVF history is the enduring emphasis on a series of firsts — first baby, first freeze, and first surrogate, among them — that invisibilize the processes, infrastructures, and potentialities and hide extended failures, surprises, and endurances.

Outputs, successes, and national origins of IVF are, unsurprisingly, much more visible than the material ways that potentialities are rendered fruitful — or not. Franklin's (2013) "frontier" intervention sought to demonstrate how IVF progress was often more haphazard than the clear narrative of scientific progress that is frequently presented in media and scientific accounts alike. However, as Sigrid Vertommen (2015) points out, the metaphor of the "frontier" is fraught with colonial imagery and IVF itself is implicated in colonialities of power, something Franklin neglects to take up in her account. Vertommen's critique comes amid growing debates about decolonisation (particularly where I am located in South Africa) and the necessity to think through metaphors and forms and practices of knowledge-making (Harrison et al. 2016; Allen & Jobson, 2016).

With this in mind, one can also take note of how narratives of IVF history stress national origins, while neglecting the migrations, capital, medical actors, and patients that produce "a South African test-tube baby." For example, Dominique Darvas is often mentioned as the first "test-tube" baby born in South Africa (Tuit, 1982). And depending on how one looks at it, in many ways this is the case. In 1982, Dominique was born in South Africa, conceived as a result of IVF. While Dominique was a "test-tube" baby and born in South Africa to South African parents, the processess of removing eggs and sperm, placing them in a petri dish, and returning them to the womb of Dominique's mother took place in the UK. Magdelene and Joe Darvas had their IVF cycle carried out in the UK, then travelled back to South Africa, their home country, to deliver their baby in Pretoria. Thus, the first IVF baby born in South Africa in 1982 was the product of reproductive travel in the early 1980s. By the late 1980s, after the South African industry had developed, the local press reported that women were coming from multiple countries to South Africa for IVF treatment (Vorster, 1988). These stories complicate another singular narrative, that of the "newness" of global reproductive travel, as discussed in Chapter 2.

The Darvases were not the only ones on the move. Many of the medical professionals I interviewed whose careers began in the 1980s, some of whom were the inaugural researchers in IVF in South Africa, conducted much of their education and training abroad, in the UK, the United States, and Australia. Many doctors from those regions also served in research positions in South Africa. One embryologist who worked at a public tertiary hospital in the late 1970s and early 1980s talked about having long mail correspondences with scientists in Israel. She would take a photo of sperm samples with highlighted areas and send it to Israeli colleagues asking for more information on what she was seeing, and they would write back. Taking the "first" successes of South African IVF at face-value also negates the global movement of technologies, expertise, and people from the earliest origins of assisted conception technologies.

Unlike in the Israeli context[7], where the state has extensively funded IVF research and patient treatment to reach the highest per capita usage of IVF worldwide (Kahn, 2000; Birembaum-Carmeli, 2009), the South African government of the 1980s had little interest in the IVF project. Research was, however, conducted in the state-funded tertiary, public hospitals. This included Groote Schuur Hospital in Cape Town (affiliated with the University of Cape Town), Tygerberg Hospital (affiliated with Stellenbosch University), and Steve Biko Academic Hospital (formerly HF Verwoerd Hospital, affiliated with the University of Pretoria). According to my interviews with fertility specialists of the time, they did not receive government funding specifically for IVF research, although state funding covered their salaries for clinical work and many of the general research supplies and spaces. Many of them describe this early era in tropes of the medical "maverick": working from their garages, mixing mediums with what little they had available, conducting their "pioneering" research on their own time. Some of the project funding came from donations from the couples using the IVF treatment. According to one medical professional I interviewed, who had been an early practitioner of IVF, the first "test tube" baby born in Groot Schuur was nicknamed the "One Rand baby" for the amount that

---

[7] The Israeli case is notable for how religious doctrine, secular law, and political ideologies over who constitutes the "nation" collude in the distribution of IVF provision among Israeli Jews (Kahn 2000; Birembaum-Carmeli 2009). Gooldin (2013) reiterates this, but further includes the discourse of "emotional rights" employed in debates on ART as a character of Israeli IVF.

the parents donated after the birth. Two former patients also set up a fundraising programme at Tygerberg to raise funds from private businesses.

Figure 7. The team at Tygerberg Hospital in Bellville near Cape Town. Their work resulted in the first test tube baby from South Africa. Photo courtesy of Anzette Borcherds.

The "first test tube baby" from a South African IVF programme (as opposed to being born on South African soil to South African parents) was born in April 1984 (Kruger et al., 1986). Falcon de Vos, named after the Falcon petri dishes that held the fertilised embryo, was conceived via the Tygerberg programme. The image (Figure 1) of the 22-member team of the Tygerberg programme demonstrates that while there may be two sets of gametes, there are also many actors to result in a successful live birth. Within months, babies were born from programmes at Groot Schuur and the University of Pretoria. Many other "firsts" came shortly thereafter: The first frozen embryo ("Hospital freezes human embryo", 1985), the first baby from an egg donor ("Vrou word ma…", 1988), and the first surrogate babies (triplets) (Pleming, 1987). The latter gained international attention as the surrogate was also the grandmother: The triplets, born from a 48-year- old woman, were intended for that woman's daughter (Battersby, 1987).

Beginning in 1984, several doctors who had been working in the public sector research on IVF began to establish their own private fertility clinics. The 1980s also saw the start of the increased privatisation of South African healthcare systems, a trend that has further entrenched stratification of healthcare access, just as the right to health became entrenched in the new constitution during democratisation (Mooney & McIntyre, 2008; Ataguba & Alaba, 2012). Today, 12 of the 15 registered IVF clinics are in the private sector where a majority of the roughly 5,000 cycles per year take place (SASREG, 2017), a present-day landscape that I expand upon in Chapter 2.

Historical and current landscape of gamete donation

In South Africa, sperm donation likely occurred as far back as the 1950s (Masters 1953) , the public fascination with the practice emerged in the late 1970s and caused no lack of anxiety in the conservative, religious sectors of the ruling National Party[8] for the implications for "legitimacy" of the offspring[9]. Following the 1978 birth of the first "test-tube baby" Louise Brown in the UK, reports that doctors in South Africa were conducting "artificial inseminations"[10] provoked fury in the press (Bell, 1978; Faill, 1978). After a 1980 televised report about a sperm bank, the media asked "men and

---

[8] The majority Afrikaans-speaking nationalist political party that implemented the apartheid system and held close ties with the *Nederduitse Gereformeerde Kerk* (Dutch Reformed Church), abbreviated as NGK.

[9] Chapter 7 is a full historical account of the legislative and media debates over "legitimacy" of children via IUI with sperm donation. This chapter seeks to understand shifting ideologies over family between apartheid and democracy and how they materialized in South African law on ART usage, parentage, surrogacy, and donors.

[10] This was the accepted scientific and popular term at the time. It is still used colloquially, but in the scientific literature, researchers most often refer to intrauterine insemination or IUI.

women on the street" whether "artificial insemination" processes and the use of donor sperm were acceptable (Garbett, 1980; O'Hara, 1980). In the 1983 parliament, National Party members voiced multiple concerns during the first legislative debates on gamete donation, including questioning the morality of donor insemination and whether the process constituted adultery (Parliament. National Assembly, 1983:col.6394). The Human Tissue Act passed in 1983, and included sections legislating gamete donation for the first time.[11] "Donor babies are here to stay," wrote the news daily *Cape Argus* the following year, in reference to babies born through sperm donation (*Cape Argus*, 1984).

It wasn't until 1988 that the first child was born from a donor egg ("Vrou word ma…", 1988). At that time, and for almost the next 15 years, the majority of egg donations came either from a friend or family member (someone known to the recipient, called a "known donor"), or through so-called "super-ovulators," as one woman who had worked in IVF for 30 years described women who came in for their own IVF and produced more than 15 eggs. The clinic would ask them if they would donate their "excess" eggs to another patient who needed a donor. While no longer popular, the practice of clinics redistributing "excess" eggs continues on occasion as "egg sharing." In 2002, an American woman in collaboration with a Cape Town fertility clinic began an egg donor programme where she would recruit and conduct early screenings of South African donors. This business emerged from a larger medical tourism company that she ran, involving bringing patients from abroad to South Africa for plastic surgery.[12] From a database of willing donors, recipient patients could make a selection at the clinic rather than either having to find a family or friend to donate or selecting from gametes available at that moment at the clinic. The "agency," as it is now termed, would be paid a "matching fee" and the donor would be compensated. For this first "egg broker", as the press dubbed the profession (Cohen, 2006), the marketing strategy was clear: South Africa has a quality private medical

---

[11] For a full account, see Chapter 7.

[12] See Mazzaschi 2011 on medical tourism for plastic surgery to Johannesburg.

system for fertility treatment, one that is affordable when compared globally, and with access to an ample supply of young, white women to donate their eggs for the largely white patients coming from abroad.

However, SASREG, the professional society of reproductive physicians, clamped down on the compensation paid to donors, arguing that the amount constituted payment (which is prohibited, although "compensation" is allowed), but also that it prevented local IVF patients from affording the cost of a donor. The press, particularly the Afrikaans-language Cape Town paper *Die Burger*, sensationalised the business model, describing the practice as "egg safaris" and publishing headlines such as "Buy my eggs" (Brits, 2004a, 2004b, 2004c).[13] Several other public controversies related to egg donor agencies have ensued in the 15 years since, including the continuing debate over agencies taking South African egg donors abroad (see Pande & Moll, 2018). However, since that first agency, dozens of others have emerged, contributing to a significant contribution of reproductive travel to the local industry.

SASREG, an organisation that began in the 1980s among reproductive medical specialists, informally regulates fertility clinics and egg donation agencies but does not have official regulatory power. The organisation "accredits" agencies and calls on all registered clinics to work only with approved agencies. To receive accreditation and thus be able to operate, clinics and agencies must abide by certain industry regulations, such as donor compensation and not taking donors abroad. Accredited clinics may only work with accredited agencies. This has resulted in the bifurcation of the agency system, whereby accredited local agencies work with local clinics while otherwise unaccredited agencies take South African donors to clinics abroad.[14] Whereas in earlier years, agencies worked both

---

[13] The agency owner was forced to put the business on hold while the Department of Health investigated and confirmed that the agency complied with the law; the department cleared her and she eventually reopened the agency, she told me in an interview.

[14] Donors may travel to clinics providing surrogacy services, such as in Thailand, India, Cambodia, and Malaysia, or more recently, directly to IVF patients in Australia, the United States, Canada and Mexico.

with local clinics and took donors abroad, the accreditation system meant that agencies had to pick: Either work exclusively with local clinics and eschew participation in the international travel of donors, or take donors abroad and be essentially "blacklisted" from working with local clinics.[15]

Many in the industry, both medical practitioners in clinics and those at egg donor agencies, complained about the tense relationship between the two parties. Medical practitioners complained that egg donor agencies raised the total cost of IVF with donor eggs to levels unmanageable for their local patients; other clinic staff objected to practitioners at agencies not being medical professionals. Some clinic staff appreciated the role that agencies play in fulfilling a function that medical staff did not have capacity for — online advertisement and recruitment, for instance — but still levelled criticisms about their work. Their complaints included that agencies failed to provide full accounts of previous donations, or that agencies allowed donors who had reported marijuana usage through screening.[16] Some agency professionals complained that medical doctors were acting like "patriarchal lords," trying to preserve their dominion over IVF. Indeed, this tense relationship and record of complaints volleyed between the two institutions does seem to reflect conventional notions of gender roles, one as the patriarchal doctor figure, the other as the maternal donor agency figure (Pande & Moll, 2018). It reflects too the power struggle over who has dominion over and right to capitalise on infertility treatment. In South Africa, as in a majority of countries (ESHRE Task Force on Ethics and Law, 2002; Heng, 2007), gamete donation (sperm or egg) is legislated as altruistic, meaning technically that donors cannot "sell" their bodily material. Rather, donors are "compensated" for their time,

---

[15] This is why the aforementioned agencies that take donors abroad are not accredited and operate quietly within the South African industry.

[16] This is a grey area, both in the scientific literature and based on what I found ethnographically. Studies make reference to marijuana among other '"recreational drugs," listed in the exclusion criteria for donors (Lindheim, Frumovitz, & Sauer, 1998; Westphal & Bendikson, 2005; Reh et al. 2010). One study explains this exclusion in terms of its potential conflict with the religious and moral ideologies of the intended parents. Other studies mention the potential for marijuana usage to negatively impact the results of IVF, though there is no link established between infertility and marijuana usage (Bellver, 2014). Medical professionals I met wanted marijuana usage as an exclusion criterion for many cited reasons, including its potential for negatively impacting the IVF cycle, that it could be in conflict with the beliefs of the intended parents, and that it placed the moral character of the donor in question.

trouble and travel costs (Jordaan, 2016). SASREG presently limits egg donation compensation to ZAR7000 (US$500 in July 2019). In addition to compensation for the donor, agencies charge a “matching fee” for recruitment, screening, matching, and coordination with the clinic. This can amount to an additional ZAR15,000 (roughly US$1,100). Unlike egg donation, compensation for sperm donation varies by clinic or by sperm bank, with some compensating per donation (say, for example, ZAR1000, or US$72, per donation) and others offering a flat fee once a certain number of “straws” are filled (for example, one clinic I worked in paid ZAR7000, or US$500 for 100 straws). As scholars have noted, that exchange of biological tissues and material be understood in terms of altruism and gifting reflects the belief that selling bodily material is largely viewed as unethical (Holland, 2001; Almeling, 2006). At the same time, however, fertility is a multi-billion-dollar global industry (Grandview Research, 2019). Who can legitimately claim a stake to a portion of that industry is guided by notions of what constitutes value and what is considered (in)appropriate commodification.

Today, egg donation operates predominantly through the nine accredited agencies (SASREG, personal communication) that coordinate anonymous egg donation for both local and cross-border patients;[17] some clinics have their own egg agencies and sperm banks. Donations through known relations, such as family members and friends, is rare in the interactions that I observed; thus, the anonymized and brokered system dominates. Agencies and clinics also must follow state legislation, including the National Health Act (2003), and subsequent regulations from the Department of Health (Regulations Relating to Artificial Fertilisation of Persons, Department of Health, 2012). This includes gathering information on and screening of donors that stipulates medical checks, family medical

---

[17] In contrast to the ban on agencies taking donors abroad, clinics and local agencies welcome cross-border patients to South Africa.

histories, and psychological screening; the latter must be within at least a year of making the donation.[18] Once accepted, women can donate up to every three months and for a maximum of six occasions. Sperm and egg donors can also only provide gametes for use in six live births.[19] The law expressly stipulates that matching (between donor and recipient) must respect donor wishes in terms of the recipients' "population group" (i.e. the apartheid term for race categorisation) and religious group, "as well as any other wish" (Regulations Relating to Artificial Fertilisation of Persons, Department of Health, 2012). The latter refers to donors' wishes with respect to single parents, gay or lesbian couples, or to wishes pertaining to the race and religion of the intended parents. South African law also stipulates that donors must provide (and intended parents must receive) specific information, such as personal medical history, family medical history, population group classification (meaning race), complexion (i.e. skin tone), religion, education, occupation, and interests (Regulations Relating to Artificial Fertilisation of Persons, Department of Health, 2012).

Researching IVF

Methodology

---

[18] The regulations allow for psychological evaluation for suitability of gamete donors (Regulations Relating to Artificial Fertilisation of Persons, Department of Health, 2012: 9). Regulations from SASREG stipulate psychological evaluation of egg donors (only) within one year of their donation (SASREG, 2015). Justifications for this suite of regulations from those I met varied from claims that it would ensure informed consent, ensure the psychological "suitability" to donate (thus precluding those with depression or anxiety that would make them unable to donate safely), and allow review of family medical history for genetic psychological issues (such as schizophrenia or bipolar disorder). In a later chapter, I trace how the screening process becomes a platform for performances of altruism and morality for donors.

[19] This is also an internal debate; that is, over whether the law means six donations, six live births, or six families. It is an issue of contention that many in the industry are attempting to gain some clarity. An early draft of further regulations would push this to 12 live births. Clinics are required to register donors and all live births resulting from donation with the Department of Health, which, according to the 2012 regulations, should have a national registry. However, as of July 2019 the department has not yet established one. See Chapters 7 and 8 for more on these debates.

Research aims and central questions:

The aim of this research is to provide an ethnographically grounded account of how potentialities materialise in IVF in South Africa. I began this journey as a part of the First Thousand Days of Life project, led by my supervisor Professor Fiona Ross. This project was organized around three thematic areas: Forms of Life, Nutrition and Food, and Genes and Technologies. As a member of this project, I was interested in the way that the First Thousand Days framed this period of life as one of immense potential, a temporal space where intervention could not only take root but have exponential impact. Yet it was also deeply fraught for the inverse; during First Thousand Days malnourishment, "poor" parenting, and the structural violence of poverty could have an exponentially greater impact over the lifetime than previously thought. The spaces of risk and potential within the First Thousand Days opened up a "scientifically backed" ideology for increased surveillance of poor, mostly black, pregnant women (Pentecost, 2018; Pentecost & Ross, 2019). As a feminist and student of Gender Studies, I was deeply interested in the politics of reproduction. I was interested in technologies and the promises and potencies that they often seemed to hold, particularly in a country where access to technology and its promise seemed so mediated by histories. For these various reasons, I turned to the concept of potential when exploring assisted reproductive technologies.

The following questions guided my work: Under what conditions did some (thing, person, object, situation) become characterized has "having potential"? What were those potentials and where were they drawn from? What systems of knowledge, technologies, and assessment methods (and their various histories) were brought to bear on the question of potentialities? How did relations to certain tissues (eggs, sperm, embryos) change in relation to their seeming potentialities? What socio-cultural forms (e.g. gender, kinship, and race) were these technologies putting at risk — and how were they rendered stable? And finally, what could IVF tell us about "older" social structures that shaped potentiality — race, class, gender, for example?

These are broad and perhaps abstract questions. I sought to "enter the field" with these broad questions in hand with the plan to accommodate for flexibility and adaptability to the responses I received and observations I made.

Making entrances

The common anthropological idea of "entering" or "exiting" the field indicates much clearer delineations of time and space than my fieldwork bore out. I lived at the time in Cape Town (and still do). While I dedicated more than a year to "fieldwork" as a discrete temporal period of work, I lived near my "field" and had to juggle both private family life and fieldwork existence. On more than one occasion, I ran into participants in my study when "at home" with my partner. This juggle between life "in the field" and life "at home", part of what Aihwa Ong (2003:xvi) calls "commuter fieldwork," belies the clear divisions between these spaces that are often assumed when designing fieldwork.

Furthermore, while not autoethnographic in any sense, my own positionality shaped this research in the questions that I sought to ask, the spaces and conversations I was able to access, and the relations I shared with participants. Firstly, I am a white woman with both United States and South African citizenships. My "South Africanness" and access to that national identity often became a subject of conversation with participants. My experiences of South Africa during my first 24 years of life were limited to visits to grandparents at Christmas. I moved to South Africa in 2009 to start a Master's degree in Gender Studies at the University of Cape Town. At the time, I did not realise that I could claim citizenship, but instead brought my South African birth certificate to the embassy to apply for a student visa. I was promptly rejected and told to visit Home Affairs and obtain an ID book. Ten years later, and I still use these papers — ID, passport, birth certificate — as artefacts of legitimacy to my claim of South Africanness, at times when my American accent does not hold credibility. This sense of in-betweenness, of multiple locations of belonging, and of insecure claims to that belonging, was a motivating factor for my decision to continue researching South Africa, and in particular, South African whites. That whiteness undoubtedly allowed me access to spaces of racial homogeneity in clinics, where other white South Africans would proffer theories of black racialization and assume that because I presented as white, I would share their racial, and at times racist, ideologies. Similarly, being a woman studying infertility seemed to "make sense" for the majority that I encountered. I believe that being a man would have seemed incongruent with the idea of who was affected by infertility and thus who could empathise and understand it. Aditya Bharadwaj describes his gender as an initial challenge in his research on IVF in India; occasionally some women refused to discuss their treatment and infertility with him, but those who did discussed it easily (Bharadwaj, 2016:31-2). However, many participants — particularly infertility counsellors and patients — asked me about my own fertility status and my interest in the topic was interrogated. Why was I interested in infertility treatments if I didn't have infertility myself? I typically explained that both my siblings used assisted reproductive technologies to procreate, an answer that seemed to satisfy most inquiries. However, I was intrigued by the gender and professional divisions of this expected personal encounter with infertility in relation to my research questions; male doctors never asked me about my personal encounters or reasons for studying IVF treatment, while all (female) psychologists and counsellors and most patients and nursing sisters did.

Ultimately, my positionally and the relationships that were mediated via my position shaped the research that I was able to do. Being both an "insider" and "outsider" allowed me to at times find common ground with participants, and at other times to ask questions that would be "obvious" for a South African. My race and gender allowed for ease of access into clinic spaces, thus relying on the very power structures that I sought to study. These factors undoubtedly impacted the work that follows.

Studying in sites of privilege

To most, studying race in South Africa means studying blackness. When I started my fieldwork, I introduced myself to a group of white embryologists and began explaining my project. “Are you going to look at race?” one asked. Being new in this field, I was somewhat thrown , and unsure how to navigate the question. I mumbled something ambivalent and vague in response. “Well, you should!” I was promptly told, followed by a litany of stereotypical observations on black patients. To them, to study race meant to study “the Other” and their otherness, not whites. Because I focused on private fertility clinics (and their location in a deeply socially, racially, and economically divided society[20]), I found myself studying ARTs among a privileged minority in South Africa. This was not a coincidence; rather than seeking to examine ART in the public sector (of which there are a few, minority of clinics), I specifically sought out the privileged private sector. I wanted to understand the ways in which privileged is maintained.

What does it mean to study forms of privilege and its maintenance in South Africa today? When I first began my doctoral degree in 2014, Francis Nyamnjoh’s (2012) piece “Blinded by Sight” was facilitating a discussion on the role of Southern African anthropology in post-colonial Africa and South Africa, in particular. Part of this discussion addressed what Nyamnjoh criticised as the lack of ethnographic accounts of whiteness in post-apartheid South Africa.

> The relatively little anthropological curiosity regarding whites in South Africa might suggest that South African whites are — regardless of their internal hierarchies of purity — beyond ethnographic contemplation or that because they have the same genealogy as the majority of anthropologists who have arrogated to themselves the business of mapping out and documenting the cultural diversity of their country, their essence defies tamping by geography and by the social (Nyamnjoh, 2012: 70-71).

---

[20] See Chapter 2 for a thorough description of the landscape of fertility treatment in South Africa, stratified reproduction, and the intersections of race and class.

The effect of this, argues Nyamnjoh, is that it leaves the realms, or "tribes" as he cheekily describes them, of anthropologists as unexamined. His critique of a lack of scholarship within Southern African anthropology on whites is part of a larger critique of a lack of reflexivity in anthropological practice in Africa. He concludes with a call for critical engagements with travelling concepts of anthropology and an enduring co-production with interlocutors, beyond lip service, and with a commitment to lifelong learning and humility on the part of the anthropologist. For Nyamnjoh, the central arguments pertain to probing whose knowledge remains valued, to asking what might constitute such knowledge, and finally, who stands at the gates of what constitutes valuable knowledge about "Africa?" Perhaps not surprisingly, much of the critique took issue with Nyamnjoh's characterisation of the "objects" of anthropological knowledge. Several scholars in turn noted the research on the whites and the privileged of South Africa (Niehaus, 2013); others explained the lack of study by pointing to the need to continue a political project of understanding the world from the position of the oppressed, and cited the enduring power of gatekeepers to shape anthropological knowledge (Hartnack, 2013).

In a later response to critique, Nyamnjoh (2013) acknowledges a handful of monographs on whites and whiteness and yet again concludes that their impact has been limited in unsettling the hierarchies of knowledge production. He argues that many anthropologists remain committed to interrogating power and privilege in contemporary South Africa through an understanding of the contexts that experienced the most enduring effects and suffering at the hands of an oppressive system, rather than examining middle-class or upper-class white social networks that stand to benefit from such system and privilege. Enduringly since apartheid, race and class operate in South Africa as modes of structuring privilege, a point I will return to in the next chapter.

In absorbing Nyamnjoh's critique, I sought to examine sites of racial and class privilege that are less often examined. Furthermore, private health facilities are particularly difficult to access and examine, despite my own research findings (Moll 2019) demonstrating how they have become powerful sites for the reproduction of racialization. However, in doing so, I also leveraged my own racial and class privilege in gaining access to sites, interviews, and data. In examining and unpacking the power relations I observed, I cannot neglect the fact that I have also relied upon them to do so. I believe that being a middle-class white woman played a role in being given access to clinics and set medical professionals, who largely came from the same racial and class background, at ease. It is an enduring tension in my research — between the political and ideological ambitions and the ways that race, class, and gender "in the field" play out — that remains. Finally, Nyamnjoh's critique also addresses the question of concepts and the global mobility of certain concepts. Examining potentiality as a concept and how it materializes ethnographically allows for a critical engagement with the limits of certain theories. Does potentiality, presently theorized largely from Euro-American contexts, "work" in thinking through South African IVF, and to what degree does it hold?

Research Site and Methods

Using multi-sited (Marcus, 1995) ethnographic methods, I traced potentiality across various "sites." Site is a term often related to the space where anthropological research takes place; here I think of it more as denoting areas of social life where potentiality is articulated (Svendsen, 2011; Taussig, Hoeyer, & Helmreich, 2013). Practically speaking, multi-sited ethnographic research involved finding connections across different spaces and networks, moving from fertility clinics to social media advertising and egg donor agencies.

The inclusion of certain clinics within my observation was a result of the clinics' willingness to participate. The first clinic in June 2014 I visited generously allowed me access to observe for a day but did not want long-term observation. This repeated itself often: I would be invited to come for a chat and discussion, or there would be an exchange of a few emails, but ultimately several clinics did not see the benefit of having an anthropologist in their labs and clinics. They were private clinics trying to serve a population of patients that they believed, generally speaking, valued privacy, efficiency, and effectiveness. I could potentially hinder the work at the clinic without adding much in the way of value. In essence, I would be too much work — be in the way, bother their patients, disrupt the workflow — for some unknown benefit. The first clinic to provide access did so after a series of meetings and sight of my proposal. Subsequently, I sent formal letters to all 15[21] private clinics in South Africa. I had responses from five clinics: One rejection, two were interested — one subsequently did not respond and the other was located in a place where it was not financially feasible for me to conduct fieldwork — and two accepted.

In total, I conducted participant observation in three fertility clinics in Cape Town and Johannesburg. The length of time spent in each clinic varied from three to five months. If one describes the size of a clinic not by its physical presence but by the number of IVF cycles accommodated each year (which is often how these clinics described themselves), the clinics ranged from small (around 300 cycles per year), to medium (between 700 to 1000), to large (from 1000 to 1300 cycles per year). Several of the physicians allowed me to observe patient consultations, for which I also, of course, received permission from the patients. I sat in on more than 20 consultations. When they arrived at their visit, the physician would introduce me to the patients and ask their permission to allow me to observe their interactions, explaining that I was a doctoral student studying "the social side" of IVF or "patient behaviour," an expression that caused me to flinch. No one ever rejected permission, but I would often make sure during the more "private" elements of the consultation — ovarian scans, for instance — to either stay out of the space, or to remain steadfastly near the patient's

---

[21] One may notice that this number differs from a previous reference of 12 private clinics of 15 total in South Africa. The number of clinics vary. The first number comes from the SASREG report. I found 15 private fertility clinics online when it came time to mail letters. Other sources have listed as many as 20 clinics in South Africa (Whittaker, Inhorn & Shenfield, 2019). The fluctuations are likely due to smaller clinics shuttering or whether a gynaecology centre that offers some fertility treatment (IUI for instance) constitutes a clinic.

face. These consultations consisted of discussions over previous, current, and future treatment options and ovarian ultrasound scans.

I spent extended periods of time in the embryology and andrology laboratories, observing IVF and ICSI procedures, oocyte aspirations and "pick-ups" (the embryologists removing oocytes from aspirated follicular fluid), embryo transfers, embryo biopsies, laser hatching, semen analysis, and sperm preparations.[22] Many of these procedures move between lab and theatre, and between living bodies, machines, and microscopic tissues. My mobility depended on various permissions from the clinic, the physician, the patient, and the lab staff. Once, a physician invited me to observe in the theatre during surgery for uterine fibroids. I also observed three discussions between patients and embryologists on the process of pre-implantation genetic screening. In two of the clinics, I observed nursing sisters consulting with patients. Consultations often consisted of explaining the IVF process, and demonstrations of the hormonal injections. Some clinics offered to administer all of the daily shots for patients, and I would occasionally sit in on daily injections. During these observations, I chatted and conducted informal interviews with embryologists, nursing sisters, and other clinic staff, and made fieldnotes on the interactions between patients, medical staff and the various technological objects — paperwork and forms, needles and hormone injections, ultrasounds, and test results, among others (Moll, 2018). I also joined staff during breaks, lunchtimes, and at other informal events at the clinic. All three clinics had weekly staff meetings, during which physicians, embryologists, nurses, and occasionally, staff psychologists discussed various patient treatment plans, "problem" patients or

---

[22] Oocyte aspiration is the procedure where physicians aspirate (suction) the follicular fluid (in which the eggs reside) from the ovaries. Embryo transfer is the scheduled procedure where embryos are transferred back to the uterus. Embryo biopsy is the removal of multiple cells from an embryo for the purposes of genetic screening or diagnosis. Laser hatching is the use of microscopic laser beam to thin the zona (or shell) of the blastocyst to assist in the blastocyst's hatching, and to thus hopefully improve the chances of embryo implantation in the uterus. Semen analysis involves submitting a semen sample to multiple tests and evaluations to understand the "quality" of the semen sample and thus its capacity to fertilize, either "naturally" or using ARTs. The analysis considers, among other parameters, sperm count, morphology, motility, semen viscosity, and infection indicators. Sperm preparation refers to the process of "washing" the semen, when seminal fluid is separated from sperm.

treatments, clinic issues, new research, or general industry issues and news in South Africa. I attended the weekly meetings at two of the clinics. I also observed two donor psychological screenings, and several meetings between clinic staff and patients who sought egg donors.

I worked closely with several egg donor agencies, during which I sat in on eight meetings between agency representatives and oocyte donors over the course of several weeks. During meetings with potential donors, the agency representative explained the procedure, informed the donors of medical risks associated with donation, and asked donors questions pertaining to motivation, lifestyle, and possible impediments to the time commitments of donation. Donors were given the opportunity to ask questions related to the donation process, after which they were added to official databases for potential selection. I obtained permission from the donors to observe during these meetings.

Outside of clinics, I attended conferences, notably the scientific conference of SASREG, the professional society of reproductive medical specialists, but also that of the Special Interest Group of Embryologists in Cape Town, which invited me to speak at one meeting. I also attended workshops from the South African Law Reform Commission on the changes in legislation that pertained to ARTs.

Interviews

During the course of fieldwork, I conducted many interviews, both formal and informal. I categorize these as interactions between medical professionals, donor agency professionals, patients, and donors.

I interviewed all the physicians at each of the three clinics, nine in total. Among clinic staff, I interviewed 15 embryologists (either formally or informally), two psychologists (providing counselling to patients and screening donors) who were based at clinics, five nursing sisters, and three professionals who described themselves as IVF or surrogacy coordinators.[23] I conducted formal interviews with five agency professionals.

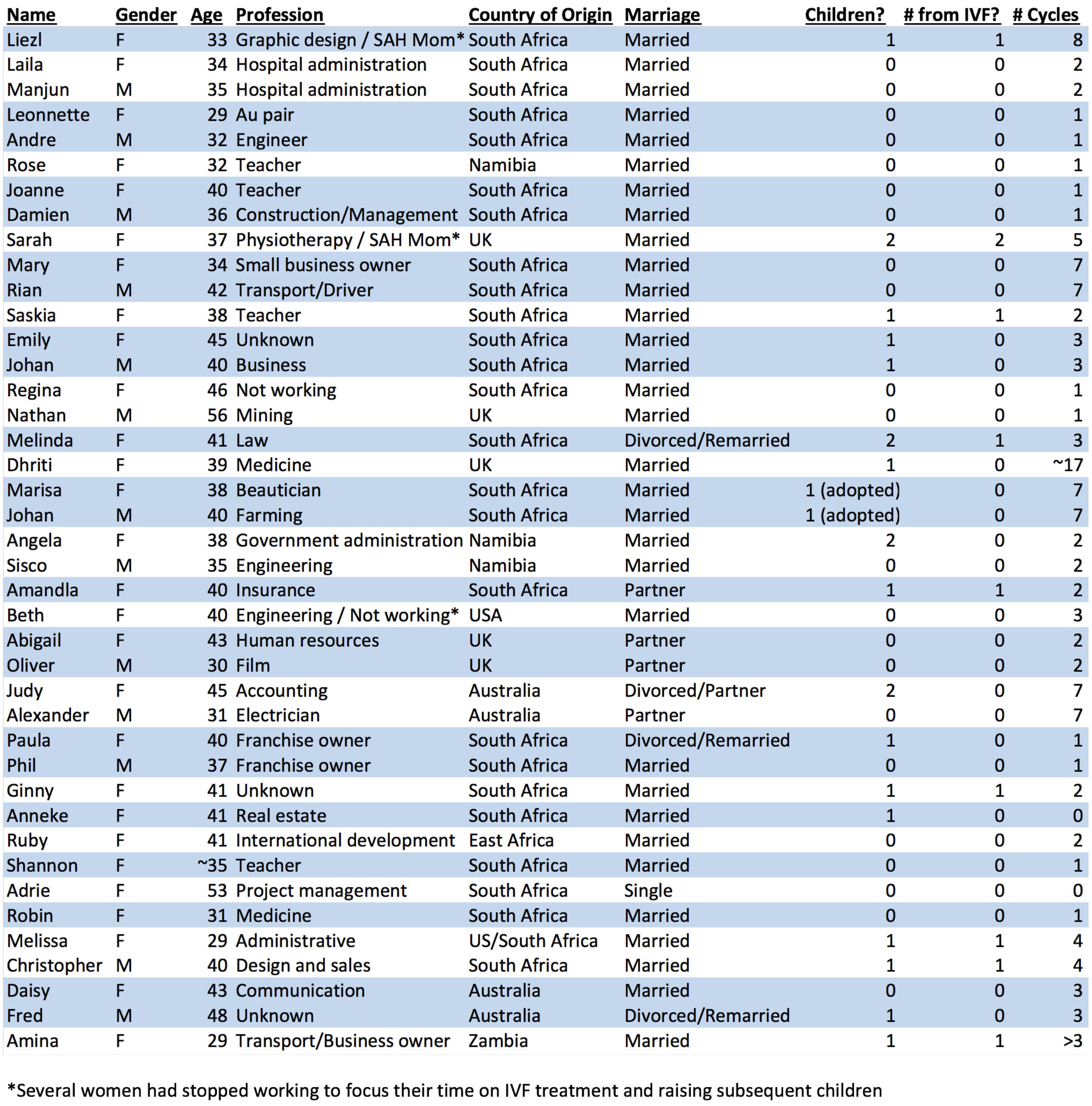
The number of patients depends on who constitutes *the* patient of IVF. Is an egg donor a "patient?" Is the patient the person "at fault" for the couple's infertility? Is the patient the one undergoing treatment at that moment or the couple as a whole? For the purposes of this research, I refer to the couples or individuals undergoing IVF treatment to achieve conception as the patient; both men and women were designated as patients. Those producing or having gametes extracted for an IVF cycle of others I refer to as donors.[24] Several scholars have pointed out that the burden, and thus the patient role, in IVF is overwhelmingly gendered (Cussins, 1996; Franklin, 1997; Becker, 2000). Women's bodies are subjected to greater intervention during the process and thus spend a greater amount of time in the clinic. Women thus constituted the overwhelming majority of the patients I interviewed. In total, I conducted semi-structured interviews with 41 patients; 11 couples were interviewed together. This is in addition to the several dozen patients I observed and had informal discussions with during consultations, aspirations, embryo transfers, and meetings with clinic staff. All of those I interviewed were heterosexual, and almost all were married, with the exceptions being two in long-term partnerships, and one single woman. In total, I observed two gay male couples throughout the year of fieldwork. There are undoubtedly many reasons for the dominance of heterosexual participants, but I attribute at least some of the absence of queer couples or individuals — either gay, lesbian, or trans — in my study to its location within IVF clinics in particular. Many lesbian couples seek donor sperm but may have the intra-uterine insemination (IUI) procedure —

---

[23] IVF, particularly with third parties such as donors or surrogates, is a finely coordinated process, well described by Thompson (2005). The larger clinics often had staff, generally nursing sisters, whose function was to coordinate the process between physicians, embryologists, patients, donors, surrogates, and lawyers.

[24] Some scholars take issue with the designation of "donor" since the term conceals economic relations (Fox, 2008). In a co-authored piece, Amrita Pande and I (2018) used the term "egg providers;" in this thesis, I use the term donor since those I interviewed referred to themselves using that designation and because the economic relations of the oocyte donation process is not the primary focus of this thesis.

where the processed sperm is inserted into the uterus following hormone injections and monitoring — at a gynaecologist's rooms. Gay men seeking the use of assisted reproductive technologies often turn to surrogacy, where a woman carries the pregnancy with an agreement to give the offspring to another couple or individual (Zegers-Hochschild et al., 2009). In these cases, other than "providing the sample," the clinic language for when the male partner comes to the clinic to masturbate to provide sperm for use in ARTs, gay men's clinic interaction is mostly limited to e-mail and coordination. That is, they are simply not needed physically at the clinics as often. I observed one gay couple meeting with a physician during my observations in consultation rooms. Most patients were South African, but there were several exceptions, including three patients from the UK and two Americans living here and married to South Africans, several couples and patients who travelled from abroad solely for IVF, including from Australia (two couples), the UK (one couple), Namibia (one couple, one individual), Zambia (one individual), and East Africa (one individual). As I shall describe more fully in a later chapter, South African clinics receive numerous patients from abroad requiring IVF, and particularly for IVF with donated egg cells. The average age of patients was 38, ranging from 29 to 56.



Name	Gender	Age	Profession	Country of Origin	Marriage	Children?	# from IVF?	# Cycles
Liezl	F	33	Graphic design / SAH Mom*	South Africa	Married	1	1	8
Laila	F	34	Hospital administration	South Africa	Married	0	0	2
Manjun	M	35	Hospital administration	South Africa	Married	0	0	2
Leonnette	F	29	Au pair	South Africa	Married	0	0	1
Andre	M	32	Engineer	South Africa	Married	0	0	1
Rose	F	32	Teacher	Namibia	Married	0	0	1
Joanne	F	40	Teacher	South Africa	Married	0	0	1
Damien	M	36	Construction/Management	South Africa	Married	0	0	1
Sarah	F	37	Physiotherapy / SAH Mom*	UK	Married	2	2	5
Mary	F	34	Small business owner	South Africa	Married	0	0	7
Rian	M	42	Transport/Driver	South Africa	Married	0	0	7
Saskia	F	38	Teacher	South Africa	Married	1	1	2
Emily	F	45	Unknown	South Africa	Married	1	0	3
Johan	M	40	Business	South Africa	Married	1	0	3
Regina	F	46	Not working	South Africa	Married	0	0	1
Nathan	M	56	Mining	UK	Married	0	0	1
Melinda	F	41	Law	South Africa	Divorced/Remarried	2	1	3
Dhriti	F	39	Medicine	UK	Married	1	0	~17
Marisa	F	38	Beautician	South Africa	Married	1 (adopted)	0	7
Johan	M	40	Farming	South Africa	Married	1 (adopted)	0	7
Angela	F	38	Government administration	Namibia	Married	2	0	2
Sisco	M	35	Engineering	Namibia	Married	0	0	2
Amandla	F	40	Insurance	South Africa	Partner	1	1	2
Beth	F	40	Engineering / Not working*	USA	Married	0	0	3
Abigail	F	43	Human resources	UK	Partner	0	0	2
Oliver	M	30	Film	UK	Partner	0	0	2
Judy	F	45	Accounting	Australia	Divorced/Partner	2	0	7
Alexander	M	31	Electrician	Australia	Partner	0	0	7
Paula	F	40	Franchise owner	South Africa	Divorced/Remarried	1	0	1
Phil	M	37	Franchise owner	South Africa	Married	0	0	1
Ginny	F	41	Unknown	South Africa	Married	1	1	2
Anneke	F	41	Real estate	South Africa	Married	1	0	0
Ruby	F	41	International development	East Africa	Married	0	0	2
Shannon	F	~35	Teacher	South Africa	Married	0	0	1
Adrie	F	53	Project management	South Africa	Single	0	0	0
Robin	F	31	Medicine	South Africa	Married	0	0	1
Melissa	F	29	Administrative	US/South Africa	Married	1	1	4
Christopher	M	40	Design and sales	South Africa	Married	1	1	4
Daisy	F	43	Communication	Australia	Married	0	0	3
Fred	M	48	Unknown	Australia	Divorced/Remarried	1	0	3
Amina	F	29	Transport/Business owner	Zambia	Married	1	1	>3

*Several women had stopped working to focus their time on IVF treatment and raising subsequent children

Figure 8. The list of patients I interviewed during fieldwork. The majority were women, South African, married, and in white-collar professions. Couples are blocked together by colour.

In thinking about the demographics of participants, race, as I discuss further in a later chapter, maintains an intense hold on social identities and relations in South Africa, and despite the end of apartheid, the racial identities imposed and regulated during that time continue to have traction and usage in everyday interactions.[25] Further, the racial disparities within the clinics were stark. Firstly, clinic staff was overwhelmingly white, and the few exceptions were in low-level positions, such as nursing assistants, receptionists, surgical assistants, or "tea lady" — the women who would care for and bring tea to patients recovering after aspirations. This is not the case with all clinics in South Africa, and the staff I worked with referred to other clinics occasionally as the "black clinic" or the "Indian clinic," presumably because the professional staff at those institutions were black, coloured, or Indian, or the patients were; I was not sure. The patients I interviewed were more racially diverse than the staff, yet still predominantly white: Two patients were Indian, one was coloured, five were black, two did not identify, one described herself as Somali, and the remainder, 30, identified as white. Only two of the couples were "mixed-race," meaning the partners were from different racial categories. In both cases, one partner was Indian, and the other partner was white. The racial terms I am using here were self-ascribed; yet they almost always correlated with local understandings of race classification. The patient racial demographics differed depending on the clinic. In Cape Town, the patient demographic was overwhelmingly white, and the foreign population generally came from the Global North — Australia,[26] the UK, Germany, and the United States. In the Johannesburg clinics I attended, the patient demographic was increasingly racially diverse, and patients from abroad generally came from other African countries — among them Zambia, Cameroon, Kenya, Uganda, Zimbabwe, Botswana, Swaziland, and Nigeria — but also a handful of patients from Australia.

---

[25] Race classification in contemporary South Africa remains embedded in apartheid-era categories. Today, people use the categories white, coloured, black, Indian, and Chinese or Asian. There has been some push back against the term "coloured," with some referring to themselves as Khoisan or "so-called coloured." In apartheid (and enduringly today) classification, white refers to those of Euro-American descent; black refers to those also referred to as African or by one of the nine ethnic groups, formerly referred to as "Bantu-speaking" peoples; coloured generally refers to those of Cape Malay descent, "mixed race," or Khoisan; Chinese or Asian refers to those from East Asia. See Chapter Six for a more nuanced discussion of contemporary racialization.

[26] There is, of course, debate over whether Australia (geographically and etymologically in "the South") constitutes the Global North or Global South. As Dados and Connell (2012:13) argue, the "Global South" largely "functions as a metaphor for underdevelopment." As a settler-colonial country considered part of the "developed" world, and with similar indicators of wealth, privilege, and development, I would argue Australia's place is in the "Global North."

The majority of patients were approached at the clinic, where clinic staff would ask the patient if they would consent to an interview, and I would follow up with an explanation of the research and consent forms. About half of the interviews were conducted following embryo transfer, a procedure that almost never required sedation, and when some of the clinics required that female patients lie down for an hour. Additionally, I recruited two couples through personal networks. Thus, I conducted most patient interviews in clinical spaces, with a rare interview at someone's home, and on two occasions at a café as requested by those patients. One clinic required that I carry out all interviews at the clinic and maintained that my idea to interview patients at their convenience and potentially at their homes, would constitute a violation of patient privacy. However, this involved conducting interviews in recovery rooms where only a curtain separated patients, making our interviews audible to others resting nearby. No one I spoke with objected to interviews, nor to the location where we held the interview.

Through clinics, agencies and snowball sampling, I also conducted one-on-one, semi-structured interviews with 13 oocyte donors (and one sperm donor who requested to be interviewed after a staff member introduced us). I interviewed one donor twice through her two donations. I recruited donors through similar methods. I met eight donors through agency interviews; after subsequent contact, two agreed to further interviews. I approached two further donors via direct contact with agencies. The remaining donors I either met at clinics, through snowball sampling from other interviews, or via personal contacts. I did almost all the interviews with donors at cafés that were located near the donor's home, work, or university. During agency interviews, I met one donor that was coloured and one that was black, but neither consented to a follow up interview. All the egg donors were white women between the age of 21 and 33. Four had borne children, and one was a stepmother. Some I interviewed prior to their first donation; one had made as many as eight donations. Donors I interviewed averaged 3.4 donations. The average age of first donation was 22.8. The class background of donors varied and was also more complicated than can be expressed in this chart. Three were full-time students; one was studying part-time through the University of South Africa. The majority had white-collar professions, although six described their backgrounds as working class.

Name	Age	Race	Profession	# donations	First donation age	Parent?
Rebecca	26	White	English teacher / student	3	26	N
Andrea	33	White	Administration / teacher	0	N/A	Y
Desiree	21	White	Athlete / administration	6	18	N
Sophie	24	White	Educational technology	3	21	N
Wendy	29	White	Human resources	3	26	N
Marlis	24	White	Administration/ Bookkeeping	4	21	Y/Step
Elisabe	33	White	Small business owner	0	N/A	Y
Natasha	26	White	Massage therapist	4	Unknown	Y
Amy	24	White	Student	2	24	N
Jessica	25	White	Student	6	20	N
Jaci	32	White	Administration/ Bookkeeping	1	32	Y
Lily	25	White	Student	5	19	N
Elizabeth	25	White	Small business owner	8	21	N

Figure 9. List of the egg donors I interviewed.

Texts, social and traditional media

A major component of this research was the use of both social media and traditional media. I used Sabinet to cull a large collection of historical newspaper and other print articles on gamete donation, IVF, surrogacy, and "artificial fertilisation," as it was termed then. I gathered both English and Afrikaans press reports. I also followed all of the fertility clinics that had Facebook pages, all the egg donor agencies that had Facebook pages, and joined a mom's Facebook group for the Cape Town and

Johannesburg areas. I also followed the International Infertility Awareness Association of South Africa on their social media pages. Finally, I collected documents from a variety of sources that I treated as texts for analytic data (such as Chapter 3 where I look at the making and presentation of IVF success rates).

Traditional media archives provided a vast array of information on the historical and popular debates around ART usage in South Africa and contributed greatly to Chapter 7 on historical kinship debates. Both traditional and social media offered a broad framing of the contemporary debates about IVF and donation, updates on the industry, and summaries on changes in law and regulation. Social media in particular served as an advertising venue for donation agencies and fertility clinics and demonstrated how these institutions sought to frame their work and seek out patients and donors.

Ethics

This research complied with the ethics guidelines as outlined by Anthropology Southern Africa (2005) and the Department of Health regulations on research with human participants (National Health Act, No. 65 of 2003. *Regulation*, 2014). All participants completed consent forms. One form gave consent to observation; all clinic staff completed these forms. A second consent form gave consent for one-on-one interviews. During the process of filling in consent forms, I would explain the objectives of the research and that participation was voluntary, confidential, anonymized, and that participation could be revoked at any time. No participant revoked his or her participation. There was also the matter that I how I worked leveraged existing power asymmetries in the clinic[27]. That is, I came into contact with patients often through doctors and nurses (those in positions of power and in control over patient care), and that it was likely that many patients did not want to refuse my presence because of that. Similarly to how Charis Thompson (2005) describes, in being introduced as a medical

---

[27] Many thanks to the external examiner that pointed this out.

professional and wearing a white coat, many patients could have assumed that I was a medical trainee, despite my attempts to explain that I was rather a social scientist. Most of the patients I interviewed seemed to enjoy the process, but this could be explained by the self-selective method of asking to be interviewed in the first place. I think that for many I interviewed, it allowed them to describe and explain the process and their feelings to a person who understood how IVF worked and yet also someone that remained removed from their "private" and day-to-day life. Rather contrary to the idea that closer relations would facilitate interviews, I believe that for most patients, their willingness to provide information was encouraged by the knowledge that I would likely never see them again. This assumption was further supported by the outcome that most patients chose not be interviewed again.

The physicians of one of the clinics asked to see (and received) a set of sample questions prior to starting my interviews. I initially worried about the potential for interviews to cause distress to patients. Physicians at one clinic told me they worried about this too, and that distressing patients would reflect badly on their practice. After the fieldwork at their clinic, they reported that they had heard only affirming reports about my work and thanked me for the professional way I engaged with participants.

Organization of the dissertation

My work has been substantially influenced by feminist science studies (which I shall expand upon more in the next chapter). There are of course many areas of feminist science studies — different theories, internal debates, and complexities, to which I do not have the space here to do justice. Yet, simply put, feminist science studies seek to disrupt the established order. In organizing the thesis, I have eschewed what could be called a "traditional" narrative of IVF, that is, one that follows the teleology most often represented in these stories: from infertility diagnosis, hormone injections, gametes and cells, to pregnancy, live birth, and babies. Instead, I have traced various sites of potential and tracked how that potential materialized and is marked and managed and relations thus instantiated. In some of the chapters, potentially emerges through well-traversed idioms; in chapters, I open the question of potentiality as a question and less as a fixed schema. This affords me to interrogate the question, in the conclusion, about the stretching and mobility of concepts more generally.

This investigation is organized in sections hinged on two ideas. In the first, I explore how numbers anchor potentialities in the experience of IVF. I unpack and excavate the knowledge systems that produce numbers, both "big" and "small," and trace the social relation instantiated through them. This first section explores the collusion of scientific certainty with the affective registers that uncertainty instantiates and the ways in which capital makes claims on those gaps. In the second section, I explore how the "risk" potential of IVF in regard to its social meaning is domesticated via normalising regimes. IVF has the potential to make the world differently, yet it most often does not. Instead, in this second section, I look at how different orders where IVF could upend established ways — motherhood and morality, race, and kinship — become sites of normalization and management of potential. Each section begins with an ethnographic vignette from a patient to situate the thesis in the stories of those I worked with.

Chapter 2 reviews the theoretical and disciplinary location of this work within a feminist medical anthropology of reproduction, and postcolonial science and technology studies. Further to this, I address the question of what an examination of "South African IVF" contributes to the ART literature. Here, I locate ART and fertility technologies within a brief history of reproduction and biopolitics in South Africa and provide context to the question of reproductive stratification to explain how ARTs are located within the larger political-economic environment. In Chapter 3, the first ethnographic chapter, I first unpack the making of "success rates" in IVF, arguing that their seeming simplicity and mobility conceals numerous methodological decisions. I argue that success rates work in the clinic as operatives of regimes of truth and hope, whereby success rates presence indicates a potential future child. Doctors use these figures to instantiate "reality" and shift patients to rational actors of private healthcare. Chapter 4 traces the "small data journey," that is, the way that numbers anchor the process through IVF. I show that enumerations in the process — embryo gradings, for instance — assemble both embryo viability and embryo agency, concealing other processes of valuation. Chapter 5 looks at the moral landscape of the fertility clinic, where love, money, morality, and motherhood converge. Here, I look at the gendered implications of this landscape, particularly for women patients and egg donors. I introduce the idea of the "scoping" of potentiality; that is, not only how potentiality "names and frames" but also always for veiling and concealing of other areas, bodies, objects and futures. Chapter 6 looks at race in donor matching. Here, I explore the process of donor matching that reproduces race, and I argue for the concept of "curature" as way to theorize the relational gatekeeping role of matchers in donor selection. Chapter 7 provides a historical account of the state's efforts to manage kinship in context of the potentialities of IVF and third-party assisted conception. There, I trace the connections between apartheid and post-apartheid governance of ARTs and how numerous connections endure that replicate the genealogical model of relatedness. Chapter 8 returns to the ethnographic to explore how kinship is managed in the clinic. There, I trace relatedness through forms of attachment and dis-attachment. In Chapter 9, I conclude this thesis with examining how potentiality operates both temporally and through scoping, how it frames certain element and invisibilizes others. I describe the calculative and affective regimes and argue that these regimes facilitate the commodification of reproduction. I further explore potentiality and colonial systems of power, arguing against the capital encroachment of ARTs in Africa under the auspices of "hope."

Chapter 2:

Biomedical futures and apartheid pasts: Situating the research

Mapping global repro-flows and nationalisms

With such a rich assortment of themes to explore, it is no surprise that in 2008, there were more than 50 anthropologists working in the field of ARTs (Inhorn & Birenbaum-Carmeli, 2008). At a recent conference dedicated to reproductive technology, I counted more than 100 active scholars involved. In Marcia Inhorn and Daphna Birenbaum-Carmeli's (2008) extensive review, the authors broadly categorise the anthropological literature on ART within four groups: 1. Globalisation and inequality; 2. Gender and subjectivities; 3. New kinship studies; and 4. Embryo ethics and local moral worlds. I will outline their argument and the literature, and update it, within their set categories, to provide a broad overview of the current themes in research on IVF. Within each section of this dissertation, I will narrow the focus to literature that directly pertains to questions in this study: The materialisation of potentiality in scientific practice, the reproduction of moral worlds and kinship, and the reproduction of race and whiteness in the settler colony of South Africa.

Scholarship has examined how ART and IVF in particular remain largely inaccessible for the majority of couples, even in the Euro-American contexts where they are most prevalent (Hampshire & Simpson, 2015). Inaccessibility, in a broad understanding of that term, remains a concerted interest of reproductive rights, as IVF in most contexts remains expensive and only sporadically sponsored through state healthcare systems (Ombelet, 2012; Ikemoto, 1996). Scholars have tracked the global circulation of IVF, as so-called "Western" biomedical technologies move to non-Western settings; this has allowed anthropologists to examine how these "global" technologies have become "localised" (Roberts, 2012; Simpson, 2009; Bharadwaj, 2006; Inhorn, 2003). A new edited volume, *Assisted Reproduction in Third Phase*, examines reproductive technologies in their movement to "new constituencies" (Hampshire & Simpson, 2015:8), that is, to previously excluded populations such as so-called "Third World" countries and marginalised migrant populations in Euro-America.

Gender has been a major theme within this literature since the 1980s, when feminist scholars especially were interested in the effects of ARTs, with debate broadly divided between arguments in favour of its liberatory potential and the cautionary warning that it delivered women's bodies more firmly under patriarchal and capitalist control (Corea, 1985; Briggs, 2010; Franklin, 2013). Despite infertility being experienced equally by both men and women, the burden of IVF is undoubtedly embodied within women's bodies (Cussins, 1996; Franklin, 1997, 2013; Throsby 2004). Regardless of cause, infertility and IVF treatment undoubtedly provoke what Inhorn (2003:220) calls "gender responses" that are socially and culturally specific (see also Becker, 2000; Dyer, 2004; Throsby, 2004; Parrott, 2014; Bharadwaj, 2016.

Many scholars have investigated how families navigate notions of relatedness in making IVF work towards making new kin, particularly in surrogacy and donor gamete arrangements (Bestard, 1999; Franklin & McKinnon, 2001; Thompson, 2001; Lock & Nguyen, 2010). This burgeoning field of literature was often dubbed "new kinship studies" for returning anthropological enquiry to the study of kinship (Carsten, 2003). Finally, scholars have focused on the ways that IVF becomes embedded within "local moral worlds," to use Kleinman's (1992) phrasing, notably in particular religious contexts (Kahn, 2000; Inhorn, 2003; Simpson, 2009; Roberts, 2012; Hampshire & Simpson, 2015). The local contexts also provide the backdrop for users' engagements with technology, tissue, and kin (Roberts, 2008; Svendsen & Koch, 2008). The broad body of ART literature has also explored how IVF "reproduces" more than just children, but also parents, and forms of kinship, race, and gender (Kahn, 2000; Thompson, 2005; Franklin, 2013).

Yet, for the majority, these questions have predominantly been formed and raised in Europe and the United States, in effect "re-inscribing the notion of the 'West and the rest'" (Roberts, 2008:182). Elizabeth Roberts (2012), by contrast, provides a cultural account of IVF outside of the "West," in Ecuador. Other studies include the lengthy engagements in the Middle East, namely Egypt, Lebanon, and Dubai, by Marcia Inhorn (1994, 2003, 2012, 2015). In recent years, the map outside of Euro-America is slowly being filled out with ethnographic work in Japan (Kato & Sleeboom-Faulkner, 2011), Argentina (Ariza 2015), Colombia (Shaw, 2018), India (Bharadwaj 2016; Bärnreuther, 2015), Mexico (Braff, 2010), and Vietnam (Pashigian, 2009). In the African continent, scholars such as Viola Hörbst (2015), Verena Namberger (2017), and Trudie Gerrits (2016) have explored IVF and infertility treatments in Mali, South Africa, and Ghana, respectively, and Ines Faria (2018) has researched women travelling from Mozambique to South Africa for infertility treatments.

What does an ethnographic account of South Africa contribute to this already large body of anthropological research? For one, South Africa is located outside of the Euro-American contexts of the vast majority of ART ethnographies. What have these ethnographic examinations outside of "Euro-America" contributed to the understanding of assisted reproductive technologies? For one, they have provided ethnographic evidence to counter notions of a technological black hole in the Global South. To imagine a conflict between a "global" "Western" technology and a "local" "Third World" context is to assume that contexts like India are importing scientific modalities and modernities from the "West," rather than through complex engagements, and having to acclimate their "traditions" in line with these new technologies. This diffusionist hypothesis, "the spread of

Western science from centre to periphery" (Anderson, 2002:648), reproduces the imagined relations between the West and the rest as one of plenty and one of lack; as the metropole where theory and technology emerge, and the periphery wherein they are tested and to where they are exported as objects for consumption (Bärnreuther, 2015). The work of scholars such as Bharadwaj (2016) in India and Roberts (2012) in Ecuador, for instance, fundamentally speaks back to the notion that science and technology have little to do with the everyday lives of those in the Global South (Roberts, 2008). Expanding the global map of the anthropology of ART allows us to ask different kinds of questions about nature, kin, race, and capital; and further, to understand the complex and uneven terrains in which globalizing technologies emerge. Further to this, what makes South Africa a particularly unique location to study ARTs is the unique colonial, political, and economic history that inflect its present-day social landscape. I will continue to unpack these features of South Africa throughout this chapter, following this next section on the theoretical and disciplinary location of this dissertation.

Theorizing global technologies with science and technology studies

Several scholars of IVF have drawn from science and technology studies, or what Inhorn and Birenbaum-Carmeli (2008:178) refer to as the "medical anthropology-STS [science and technology studies] nexus" where much research on assisted reproduction technologies resides. Thompson's (2005) monograph on IVF in California has been a major contribution to the field, and in my research for its contribution of the concept of "ontological choreography." Thompson argues that the IVF clinic is a site where various "ontological orders (part of nature, part of the self, part of society)" (2005:8) are assembled in highly staged ways. For Thompson, these various orders must come together in a delicate, and precarious, fashion (a choreography) in order for IVF to "work;" that is for it to make "parents, children, and everything that is needed for their recognition as such" (2005:8). Thompson's concept emerges from a larger body of work, namely material-semiotic approaches that view all elements of "social and natural worlds as a continuously generated effect of the webs of relations within which they are located" (Law, 2008:141). Drawing from this nexus, scholars have shown how embryos can be very different entities depending on the relations: Potential life or potential kin (Roberts, 2011), or become "spare" and therefore made valuable again as potential stem cells (Svendsen, 2011).[28] For scholars of race, Amade M'Charek (2013, 2010) has demonstrated how using material semiotic approaches has been useful for understanding the enduring stability of race, and yet, at the same time, allows the researcher to take race seriously not for its biological fixity but for the real, material effects that it has. I use the concept of ontological choreography to frame my thinking about potentialities and how they emerge. What Thompson's concept points to is the ontological precarity in the IVF clinic; choreography is delicate work and the risk is getting it wrong. A focus on potentialities highlights what is at stake in this choreography, that is, the potential for disruptions to certain categorical orders. The second half of this dissertation is organized around each of these categorical orders, that is, gender, morality and motherhood, race, and kinship.

Science and technology studies (STS) approaches also lend themselves to conceptualising and understanding the intersections between "global" reproductive technologies and "local" sites where they engage. The field has long been interested in the mobility of scientific knowledge and technologies. The earliest diffusionist hypothesis suggested that knowledge and technological innovations emerged from Euro-American metropoles and slowly made their way to the peripheries (Anderson, 2002). In contrast, recent STS scholarship has focused instead on networks and complicated contact zones. Specifically, within actor-network theory (ANT) or material-semiotic

---

[28] Catherine Waldby (Waldby & Carroll, 2011; Waldby, 2008, 2015) has also produced extensive work on the making of value in the oocyte market.

approaches, scholars have examined how scientific "facts"[29] circulate and become stabilised in different localities along networks (Latour, 1999; Mol, 2003; Law, 2009; M'Charek, 2013).

A critique of this method, as articulated by Warwick Anderson (2002), is that the above ANT or material semiotic approaches often evacuate the politics and historicisation of the various localities within networks:

> But often a sort of semiotic formalism seems to supervene on the analysis of such local sites: The structural features of the network become clear, but often it is hard to discern the relations and the politics engendered through it. A postcolonial study of science and technology might offer new, and more richly textured, answers to many of the questions posed in actor-network theory (Anderson, 2002:649).

Thus, Anderson and others argue for the value of postcolonial theories within STS traditions, or what is now discussed as postcolonial STS. Further to this, a long history of feminist STS scholars (Martin, 1987; Haraway, 1991; Traweek, 1993; Rapp, 1999; Thompson, 2005; Harding, 2008) a sub discipline that "insists that categories of sex, gender, and sexuality are best understood not just as mutually influential categories but rather as ones co-constructed and co-produced" (Pollock & Subramaniam, 2016: 954), has challenged the androcentric focus of science and technology studies. Recent research groups and collections of published work have catalogued literature on the convergence between these two branches of STS — postcolonial and feminist. As described by Pollock and Subramaniam (2016), bringing these three elements into conversation — feminism, postcoloniality, and technoscience — provides a rich theoretical toolbox to attend to a variety of constellations of power: How "biological engagements with the body are deeply biopolitical projects" (954); how modern technosciences "were an intimate and inextricable part of the colonial machinery" (955); and how "colonial ontologies have been 'rephrased' within the technoscientific frameworks of globalization" (2016:957; Anderson & Adams, 2008). STS approaches shape this study by reminding

---

[29] Sarah Franklin (1995, 1997, 2013) and Marilyn Strathern (1992a, 1992b) have dissected the way that English kinship systems work upon the belief in the "social facts" of kinship as emerging from the a priori "natural facts" of biology.

me to keep a keen eye on how relations constantly shape and stabilize certain "objects," often taken as natural and given. Feminist and postcolonial technoscience studies further alert one to the necessity to pay attention to forms of power that remain conscripted within these social relations. Globalizing discourses and objects of technoscience such as ARTs may move across the globe, but they land on uneven terrain (see also Pentecost, 2018), and in doing so, local structures, histories, and inequalities shape and are shaped through reproductive technologies and the related scaffolding of scientific discourses.

South Africa in the map of reproductive travel

Often based on fieldwork outside of Euro-American contexts, another group of ART scholars have explored cross-border reproductive care (Whittaker & Speier, 2010; Kroløkke, 2012; Pande, 2014; Deomampo, 2016b). Debate has flourished over the naming of this phenomenon, as several scholars (Bergmann, 2011; Deomampo, 2013; Speier, 2016;) described it as "reproductive tourism" or "fertility tourism," a subset of medical tourism (see also Roberts & Scheper-Hughes, 2011). Several scholars took issue with the name for how the notion of tourism invited comparisons to leisure, despite the suffering experienced by many of those engaging in it (Patrizio & Inhorn, 2009; Inhorn & Patrizio, 2014; Nahman, 2016). Other terms include "cross-border reproductive care" (Inhorn & Gürtin, 2011), "reproductive travel" or "repro-travel" (Inhorn, 2015), and "repro-migrations" (Nahman, 2013). The debate over naming reflects the tensions within the practice that on one hand features many elements of "tourism." These include ideologies of free choice and consumerism; migrations from the Global North to the Global South that may involve the extraction of tissue or reproductive labour from structurally marginalised women; and leisure time slotted between medical appointments and procedures (Pfeffer, 2011; Roberts & Scheper-Hughes, 2011; Speier, 2016). Many scholars have noted how the flow of repro-travellers moves along relations and hierarchies from colonial legacies; that is, enduring "stratified reproductions" (Colen, 1990) where white, Western women's reproductive desires come at the expense, labour, services, and tissue of postcolonial, marginalised, and black and brown women (Whittaker & Speier, 2010; Ikemoto, 2009b; Roberts, 2009; Banerjee, 2014; Pande, 2015). On the other hand of this tension is that patients go abroad for IVF because of numerous push factors, such as a lack of infertility services at home, and they endure experiences marked by suffering, social isolation, pain, and difficult decisions (Gurtin & Inhorn, 2011; Inhorn, 2015; Nahman, 2016). Throughout this thesis, I use repro-travellers and reproductive travel to describe the participants and their movements. I do so for pragmatic reasons; the term is simple and short.

My research here sits slightly askew. The object is not directly reproductive travel; instead, one could characterise this study as an understanding of IVF "nationalisms" in so far I am concerned about IVF practiced in a particularly South African context, with its unique history, and how this local terrain becomes built into the workings of reproductive technology[30]. However, repro-travel to and from South Africa is a part of this portrait. I have written elsewhere (Pande & Moll, 2018) about repro-travel in the form of egg providers from South Africa and the gendered forms of "biological citizenship" (Petryna, 2002; Rose & Novas, 2005; Rose, 2007) shaping egg providers' subjectivities.

South Africa is also a receiver of repro-travellers (Namberger, 2017; Faria, 2018). The number of cross-border patients is difficult to measure. Clinics where I conducted fieldwork only recorded patients' local addresses. Two clinics estimated that cross-border patients constituted 25-35 percent of their clients. One large egg donor agency estimated that half its clients were cross-border patients, and about three-quarters of these were from Australia. One of the smallest agencies I encountered said the majority of its patients were cross-border. Most agencies and many clinics dedicated a section of their website to international patients. From this, it seems that cross-border repro-travel makes up

---

[30] For a full account of South African law and policy on ART usage, sperm and egg donation, and surrogacy, both past and present, see Chapter 7.

a competitive and significant, while not dominant, slice of the South African industry. Many travel in particular from Australia for eggs donated by white women, in a migration that again complicates the "repro-scape" (Nahman, 2016). For instance, while other recipient locations, such as the Czech Republic, Romania, Greece, and Spain, have become popular thanks to the presence of willing donors who are economically and structurally marginalised (Nahman, 2011, 2018; Speier, 2016), white women in South Africa, the dominant group of donors for repro-travellers, remain within the top echelons of domestic social hierarchies, an enduring legacy of apartheid racial stratification (Van der Westhuizen, 2017). Emerging research is showing that the eggs of white South African women are less sought after globally than those of other white populations, particularly in the United States (Pande, 2018; see also Kroløkke, 2014). As my research will demonstrate, screening processes for egg donors in South Africa filter out the economically and socially marginal from their rosters (see Chapter 6). Situating South Africa's context and history within this larger flow of tissues, capital, and people ensures close attention to how history structures and edits the movement of people, technologies, and tissues (see Anderson, 2009).

In my objective to situate South Africa in the growing map of global reproductive flows and ethnographers of IVF "nationalisms," it begs the question, using Roberts' (2008) formulation, of whether South Africa constitutes "the West" or "the rest?" While politically expedient, these dichotomies are in practice less clear cut. Putting forth this question in the South African context risks playing into what some have critiqued as a tendency to South African "exceptionalism," whereby the country (or parts within it, i.e. white and wealthy corners) is seen as "the West" despite being located at the tail end of "the rest" (Lazarus, 2004; Neocosmos, 2008). What others suggest is that contrary to the notion of exceptionalism, South Africa represents an intensification of global processes and trends seen elsewhere (Shepherd & Robins, 2008). This includes processes such as deepening economic inequality, neoliberal economic policies, and an intensifying fragmentation of public and private resources (Leibbrandt, Finn & Woolard, 2012; Mayosi & Benatar, 2014; Ataguba & Alaba, 2012). The challenge here is to acknowledge the particularities and hauntings of South Africa's unique history and contemporary landscape, yet without positioning these against universalising notions of "Africa," and its invocations of lack, otherness, and alterity, and "The West," also universalised as normative (Mbembe & Nuttall, 2004).

Fertilities and stratified reproduction

Here I highlight the literature on IVF that situates it within the concept of "stratified reproduction" (Colen, 1990; Ginsburg & Rapp, 1995) and in conversation with the historical work on population control and eugenics in South Africa.

The notion "stratified reproduction" was coined by Shellee Colen (1990) in her research on domestic labour in New York. In that setting, she argued that while both employees and employers endured reproductive labour, that labour was differentially valued based on intersecting systems of race, class, and nationality. Reproduction, and its value in society, was stratified, and in turn that stratification "tends to reproduce itself by reinforcing the inequalities on which it is based," (Colen, 1995:97). Faye Ginsberg and Rayna Rapp took up this concept in their edited volume *Conceiving the New World Order* in 1995, describing stratified reproduction as simply "the power relations by which some categories of persons are empowered to nurture and reproduce, while others are disempowered" (Rapp & Ginsburg, 1995:3). Several scholars argued that stratification is further maintained via privatised markets for reproductive services, where to engage and gain access (and possibly reproduce) requires high payments, geographic mobility, and the time and flexibility required for IVF treatment (Bell, 2009; Davis, 2009; Briggs, 2010; Greil & McQuillan, 2010; Gerrits, 2015). They have demonstrated how IVF reproduces this very stratification, via privileging the reproductivity of largely white, Euro-American, and middle- to upper-class patients, while neglecting, dissuading access, or disapproving of reproduction of certain other categories of people. Or, in the case of transnational surrogacy or egg donation, relying very much upon reproductive capacities and the structural marginalisation of those same others and reproducing those same inequalities that marginalised them in the first place (Deomampo, 2013, 2016; Banerjee, 2014; Pande, 2015; Vora, 2015; Marre, Román & Guerra, 2018).[31] That is, systems of stratification — such as racism, colonialism, and class — become themselves reproduced in encounters of reproductive travel.

Manifestations of stratified reproduction take place within a longer biopolitical history where reproduction was a site of intense state and public scrutiny as affecting the population writ large (Krause & De Zordo, 2012). That some contemporary scholars refer to reproductive technologies as tools of "neo-eugenics" or "micro-eugenics," inasmuch as that they allow for the reproduction of white and wealthy populations and dissuade others, makes these links more explicit (Roberts, 2009; Daniels & Heidt-Forsythe, 2012; Pande, 2015). While IVF globally by-and-large takes place in contexts of reproductive choice, the logics remain linked to older eugenic ideas of the value of the reproductivity of certain bodies being greater than others.

A brief biopolitical history

Reproduction has historically been a powerful site for the state administration over life, what Foucault (1978) would term "bio-power." In Foucault's historical account, sovereign power over life and death gave way to administrative power to "*foster* life or *disallow* it to the point of death" (1978:138, italics in original). Such power emerged through the disciplining and optimization of individual bodies, but also through new institutions and systems of knowledge such as calculations of the birth rate, public health, education, and migration control. Ideologies over differing valuations of human life, the focus

---

[31] The case of young white women travelling from South Africa complicates the connection between reproductivity, social marginalisation, and race (Pande & Moll, 2018).

on reproduction as a place of intervention for the fitness of the population writ large, and institutions and knowledge systems that made such interventions all worked in concert to form the global eugenics movement.

In South Africa, the history of the early eugenics movement is wrapped up in notions of white supremacy and anxieties over the racial fitness of "poor whites," particularly during the 1930s (Dubow, 1995). Saul Dubow's (1995) extensive history of scientific racism in South Africa includes a local version of the global eugenics movement. Eugenics refers to a social philosophy and "scientific" ideology from the 1860s to its mainstream decline after World War II that concerned the inheritability of the ability, physical attributes, and mental "fitness" of the population and thus sought to ensure the reproductivity of the "well-born" to improve "the racial stock" (1995:121). While race science undeniably garnered some support in South Africa, and a range of academic disciplines were gathered to support apartheid ideology of separate-ness for the preservation and "purity" of the "white race," eugenics as a distinct area of study never achieved mainstream support, argues Dubow (1995:132-133). Instead, he says, support for eugenics was less about popular proponents and more bound up in the increasing professionalisation and legitimation of universities and academic circles within South Africa. Eugenic ideas in South Africa contributed to birth control movements in the 1930s that targeted the fertility of "poor white" communities and poor coloured women in the Cape (Klausen, 2004; Burns, 2004).

Shortly after the instantiation of apartheid policies, beginning in 1948, the demographic anxieties of whites and the notion of being "swamped" by the black population featured in the works of many academics and state demographers (Moultrie, 2001). Chimere-Dan (1993) argues that for the apartheid state addressing the problem of population took two forms: First, it involved the "balkanisation" of the non-white population through registration of population groups, mobility limitations, and stratification of employment opportunities; second, it involved population policies aimed at limiting black reproduction. It that regard, it can be said that there were two periods of apartheid population policy. Between 1948 and 1973, the state had distinct concerns over the balance of populations by race, yet did not yet use medical means to achieve low fertility rates; that is, it was believed that the state's apartheid policies would have the desired effect of limiting black population growth. For instance, migrant labour systems that allowed male labour only into the urban areas and limited time spent back in rural "homelands" meant that fertility could be curtailed by limiting the contact between husbands and wives (Kaufman, 2000). At the same time, the state remained concerned over the decreasing fertility among whites (Badenhorst & Higgins, 1962). In this regard, the state offered elements like tax relief for having children, such as the 1968 campaign to "have a baby for Botha," a reference to the Minister for Bantu Affairs M.C. Botha (Moultrie, 2001:130). Demographer Tom Moultrie describes this period during the late 1960s as the height of fears over white "race suicide" (2001:130). During this period, the government encouraged white immigration, resulting in the migration of over a million white people to South Africa from 1945 to 1977, particularly during the economic "boom" of the 1960s that called for an increase in skilled workers (Brown, 1987). So-called "European" migrants were Dutch, German, English, Jewish, Greek, and Portuguese (Glaser, 2010; Foster & Salusbury, 2014:93; Henkes, 2016). As one apartheid-era researcher wrote at the time, "There is no sense in withstanding the enemy beyond the country's borders while the far more serious population explosion within its borders is allowed to continue unchecked" (Rensberg, 1972, as quoted in Brown, 1987). This quote refers to the twinned perils of apartheid anxiety: The peril from without, that is, the threat of communism referred to as the *rooi gevaar* (red danger or threat), and the peril from within, that is, the threat of the interior black population or the *svaart gevaar* (black danger or threat) (Brown, 1987:262; Chimere-Dan, 1993:38; Posel, 2001:57)). By the early 1970s, the state's increasing anxiety over demographic envelopment resulted in the start of concerted and well-funded population policies involving public health education and birth control programmes (Moultrie, 2001:131-146). While the policies were put in place under the auspices of public health for all women, the racial connections — that is the concerted objective of reducing fertility among the black population — were acknowledged (Kaufman, 2000:105). That is, the state put forth the birth control programme under the auspices of "public health" to avoid the appearance of trying to tamp down the black population, which apartheid political leaders felt was necessary to assure black compliance with birth control programmes. Barbara Brown argues that the population policy gained political favour at the time due to two main factors: The first was the state fearing that the population for labour had reached the point at which it was no longer beneficial to capital and instead would result in widespread poverty; the second was the fear of losing political power as a result of a dwindling white population (Brown, 1987). The spending on the programme increased by a factor of 13 within its first decade; the majority of funds and education efforts went towards targeting the urban black population (Brown, 1987). For instance, Brown documents women working in factories being forced to have Depo-Provera shots, a form of hormonal birth control administered every three months via injection, or risk losing their jobs. Forms of contraceptives also reveal a racial disparity. Depo-Provera, as a long lasting form of birth control that some regard as unsafe[32] (Mkhwanazi, 2014a), was by the 1980s used predominantly among black women, while the Pill was more accessible within the white and Indian populations (Chimere-Dan, 1993; Kaufman, 2000). By the early 1990s, the number of family planning centres in South Africa per population was of greater density than in any other country in the world (Caldwell & Caldwell, 1993). Fertility rates in South Africa, particularly among the black population, have declined since the 1960s (Potts & Marks, 2001).

---

[32] Some recent studies have suggested a correlation between Depo and an increased risk of contracting HIV (Morrison et al. 2012; Polis & Curtis, 2013; cf. Kleinschmidt et al. 2007).

The landscape of reproductive politics and policies has changed dramatically since 1994. Yet, at the same time, the enduring effects of apartheid remain. The restructuring of primary healthcare, the legalization of abortion, the guarantee of education, and domestic violence legislation all contributed to a dramatically different policy landscape for reproductive rights (Mkhwanazi, 2014a). Anthropologist Nolwazi Mkhwanazi (2015) traces this policy shift, yet argues that despite the policy frameworks in place, young, poor, black women experience only a negligible change, enduring high rates of domestic and sexual violence, high rates of HIV transmission, and enduring social stigmatisation of their sexuality and reproductivity.

The setting: Enduring racialised and economic stratification

In a context where black reproductivity has been seen as an enduring "problem," the question of access to reproductive technologies is more than just one of money; yet economic stratification remains a significant factor in accessing IVF. The enduring legacy of apartheid is the extent to which economic disparities are racialized. South Africa is the second most unequal country in the world, according to the Gini index, the World Bank's system of ranking inequality by income. The top 10 per cent of the country controls 90-95 per cent of the wealth (Orthofer, 2016).

The black population, which accounts for 81 per cent of the total (Statistics South Africa, 2018), remains largely impoverished and geographically marginalised within peri-urban settlements, townships, and in the rural areas of former "bantustans" (Todes et al. 2010). This geographic marginalisation restricts access not only to formal employment or better paying jobs in urban areas, but also to the largely urban-based health and hospital systems (Coovadia et al., 2009) and fertility clinics (see Figure 4 for a map showing clinic distribution). Based on a 2008 survey, the mean monthly income for whites rose to R6,275 in comparison to R816 for blacks (Leibbrandt, Finn & Woolard, 2012). That means, if someone dedicated their entire salary to an IVF cycle, it would take the average black patient more than four years to save for the cheapest IVF cycle in a private clinic; a white person would need six months. Such disparity led to then-Vice President Thabo Mbeki to describe South Africa as a country of "two nations:" One black and one white[33](Mbeki 1998, as quoted in Nattrass & Seekings, 2001).

Infertility inequalities in South Africa

These inequalities are reflected in the IVF clinic. Globally, IVF is an expensive procedure, whether paid for by patients or by state medical structures. For example, in international contexts, the UK's National Health Service (NHS) uses a lottery system to limit access to IVF, as well as restricting patients by age and number of cycles (National Health Service, 2018). In several Nordic countries where infertility treatment is also provided through state healthcare systems, similar limitations are placed on access to ARTs; this is often also the area where state systems tend to introduce budget cuts (Mladovsky & Sorenson, 2010). The United States, on the other hand, is both extremely expensive — one of the most expensive IVF cycles in the world, which is not surprising given its location within the world's most expensive health system — with no access to treatment available through private insurance nor state health coverage[34] (Ethics Committee of the American Society for Reproductive Medicine, 2015).

The South African fertility system, like the health system at large, is two-tiered (Mooney & McIntyre, 2008). There are public IVF programmes in the tertiary hospitals at Groote Schuur (Cape Town), Tygerberg (Cape Town), and Steve Biko Academic Hospital (Pretoria). In these programmes, patients must by and large contribute financially to IVF, largely for medication, while some

---

[33] Nattrass and Seekings (2001) argue that this division is too broad as urban, educated, and "white-collar" South Africa post-apartheid is becoming increasingly multi-racial, yet at the same time poverty remains largely black.

[34] There are exceptions where some states have mandated that insurance plans cover infertility treatment and IVF for veterans if the infertility was caused by their service.

programmes are subsidised by public funds (Huyser & Boyd, 2013). In a study at Groote Schuur Hospital in Cape Town, researchers found that the average IVF patient contributed ZAR 12,700 per cycle in addition to the subsidy[35]; about a third of the patients in the study said they had to borrow close to the total amount to pay for the cycle (Dyer et al., 2013). More than 50 per cent of the poorest group of patients experienced "catastrophic costs" (meaning that they had to reduce spending on other needs, such as food or rent) as a result of paying for their IVF cycle. Public programmes take on a limited number of patients per year; the Groote Schuur facility has a maximum capacity of roughly 200 cycles per year (Dyer et al., 2013).

The private system, which includes 12 of the 15 fertility clinics, undoubtedly has the larger share of roughly 5,000 cycles per year (SASREG, 2017). Its facilities are spread across the country, yet the service remains distinctly urban; most clinics are located in the Gauteng province (in the metro areas of Johannesburg and Pretoria), Durban, and Cape Town, and there are clinics in Bloemfontein (Free State) and Port Elizabeth (Eastern Cape) (see Figure 4).

---

[35] Roughly US $1,200 in 2013, at the time the study came out.

Figure 10. Map showing the distribution of fertility clinics in South Africa. For scale, the distance between Cape Town (lower right) and Port Elizabeth (lower centre) is 750km, or roughly 8 1/2 hours of driving.

Private clinics have the resources to take on greater numbers of patients. In contrast to the public system, all the private clinics I observed could accommodate more than 300 cycles per year, and two could deal with as many as 1000. In the clinics I observed, the cost of a "traditional" IVF cycle (that means no donor or ICSI, which can dramatically increase costs) ranged between ZAR 40,000 and ZAR 60,000 (roughly US $2,900 and $4,300 in July 2019).

Perhaps unsurprisingly as wealth remains deeply racialized, the IVF patients that I observed were largely white; and white patients comprised 70 per cent of those I interviewed. Furthermore, the medical staff at the clinics where I worked were almost entirely white and middle-class. Thus, this dissertation offers a glimpse at reproductive services for a select and privileged (both in class and race) group of people, amid a context of enduring inequality and social stratification. For this reason, this dissertation is unique in that it examines privilege in privatised (and often removed) pockets where it endures and reproduces (both literally and figuratively).

IVF as an infertility treatment

While the racial demographics of my sample are unsurprising considering the way that race and class intersect in South Africa and render fertility treatments affordable largely only to the white and urban elite, it is disturbing in light of the reality that infertility is most concentrated within the populations who can least access treatment — among poor black men and women.[36]

What is the scope of the problem of infertility in South Africa? If one were to ask the Infertility Awareness Association of South Africa (IFAASA), a non-profit organisation that focuses on reproductive health, one in six couples[37] experience fertility problems (IFAASA, 2013). The World Health Organisation defines infertility as "a disease of the reproductive system defined by the failure to achieve a clinical pregnancy after 12 months or more of regular unprotected sexual intercourse" (Zegers-Hochschild et al. 2009:1522). The rate of infertility is difficult to estimate for a multitude of reasons, not least because of inconsistencies in the definitional terms used and the methodological challenges of gathering information on regular, unprotected sexual intercourse. Demographers use demographic data of live births, which means for looking at sterility or infertility, they measure a lack of live births by married couples; this is contrast to epidemiological studies that use the standard WHO definition of one year of non-contraceptive sexual activity without pregnancy (Larsen, 2000). For

---

[36] A recent documentary *When Babies Don't Come* tracks the infertility experience of filmmaker Molatelo Mainetjie. A journalist described it as also exploring Mainetjie's balance between urban life in Johannesburg, where she receives IVF treatment, and life in rural Limpopo, where she confronts her infertility with her family ("Documentary tackles infertility…", 2018). Mainetjie reported that her infertility arose from a combination of an ectopic pregnancy rupturing one of her fallopian tubes and a blocked remaining tube (Mosaka, 2018). Tubal issues are among the most common causes of infertility in Africa (Ombelet et al., 2008).

[37] IFAASA does not offer a citation for this statistic but reported that much of their information comes from the International Consumer Support for Infertility, an Australian-based patient support organization.

instance, in Rutstein and Shah (2004), the researchers, using the term sterility (meaning a couple that is unable to have children, see also Leridon, 1992) found that 18 per cent of ever-married women had primary sterility; 14.4 per cent had secondary sterility (inability to have a child after a first pregnancy). Marriage, a barometer that can be both defined and marked, was used as a proxy for unprotected sexual intercourse. Other studies use the term infertility defined by the WHO as 12 months of sexual intercourse without contraception, while other studies extend the period to 18 months, or even three years.[38] Some studies look at rates of live births and others at clinical pregnancies; the latter refers to pregnancies as marked by a heartbeat or gestational sac, markers that may not be relevant in certain low-resource settings due to issues with access to clinical testing (Rutstein & Shah, 2004; Boivin et al., 2007; Dyer, 2009; Mascarenhas et al., 2012).

The difficulties in estimating infertility are particularly acute in areas such as sub-Saharan Africa,[39] where the rate of infertility is believed to be much higher than the estimate and much higher than the global average (Dyer, 2009). Despite the challenges of data gathering, several scholars have argued for the likelihood of a high rate of infertility, particularly secondary infertility,[40] in sub-Saharan Africa, some referring to it as an "Infertility Belt" (Nachtigall, 2006). This is due to the high presence of co-occurring disorders of untreated sexually transmitted diseases that can cause pelvic inflammatory disease and scar fallopian tubes (Ericksen & Brunette, 1996). Dr Silke Dyer, head of the reproductive unit at Groote Schuur Hospital, has taken other epidemiologists to task for their

---

[38] Larsen (2000:285) describes the varying definitions and the difficulties for their use in research:

> It is well known that this epidemiological definition of infertility is not very specific, i.e. a substantial fraction of couples defined as infertile because they had not conceived after one year of unprotected intercourse, go on to conceive without ever receiving any treatment. Thus, the levels of infertility obtained using this epidemiological definition of infertility will lead to higher estimates of infertility, compared to estimates obtained using a demographic definition of infertility.
>
> Demographers have modified the epidemiological definition of infertility, and they define infertility as the inability of a non-contracepting sexually active woman to have a livebirth. Demographers have shifted the endpoint from conceptions to livebirths, because it is difficult to collect complete data about conceptions in population-based studies.

[39] Interestingly, I found studies that estimated the rate of infertility in sub-Saharan Africa did not include South Africa in their list of countries (Larsen, 2000; Ericksen & Brunette, 1996; Rutstein & Shah, 2004).

[40] Which refers to infertility after a first pregnancy (Mascarenhas et al. 2012).

systematic under-estimating of the problem of infertility in sub-Saharan Africa (Boivin et al., 2007; Dyer, 2009). Additionally, other factors such as HIV and obesity, which South Africa has high rates of, also dampen fecundity (Dyer, 2008; Van Niekerk, Siebert, & Kruger, 2013). Despite its likely high prevalence in sub-Saharan Africa, scant attention is paid to infertility, to treating it, or addressing some of its causes; most public health efforts instead reproduce the notion of African "hyper-fertility", supported with international funding for contraceptives and family planning (Van Balen & Gerrits, 2001; Hörbst & Wolf, 2014). The possibility that most countries in sub-Saharan Africa have high birth rates simultaneous to having high infertility rates, paired with racial imaginaries of African "hyper-fertility," invisibilizes infertility within the global imaginary of public health needs (Hörbst & Wolf, 2014). It also reflects long-standing criticisms of reproductive technologies arguing that they stoke and reproduce racial imaginaries. That is, some categories of persons fit the social imagination of who we view as potentially infertile, while others are regarded as potentially "too fertile" (Ikemoto, 1996; Roberts, 2009). Echoing Dorothy Roberts' (2009) analysis in the United States context, it is undoubtedly black men and women in South Africa who are disproportionally thwarted in their efforts to access assisted conception technologies such as IVF.

The definition of infertility does not present only a demographic and epidemiological challenge, but also assumes a clear intention toward *trying* to conceive, argue Arthur Greil and Julie McQuillan (2010). They argue that the definition assumes that the couple intends to conceive. The embedded assumption has the effect of both invisibilizing or negating ambivalences among couples and their reproductive futures, and also producing rational biological citizens (Petryna, 2002; Rose & Novas, 2005) making clear choices between not-trying and trying to conceive. Their argument is part of a larger critique of the "planfullness … as an essential component of contemporary notions of biological citizenship in industrialized societies"(2010:140). The distinction between trying and not-trying and delineations of time, argue Greil and McQuillan (2010), becomes part of the medicalisation process that makes people desiring to bear children into "infertile couples" and into "patients". IVF is, though awkwardly so, viewed as a "treatment" for the condition of infertility. Medicalisation — the processes through which the dominion of biomedicine encroaches into new areas of life (Conrad, 1992) — has been substantially critiqued, particularly by feminist scholars of reproduction — as a form of social control (Martin, 1987; Greil & McQuillan, 2010; Van de Wiel, 2014). Concurrently with the critique that biomedicalization of infertility facilitates patients-as-consumers, specifically consumers of IVF, other scholars have complicated this view by demonstrating how medicalization is often viewed as a relief (Cussins, 1996; Becker, 2005). Cussins (1996) refers to this as "strategic objectification," that is, how women employ agency to participate in their own objectification, part of a larger strategy to achieve their desired pregnancy, she argues. Others have noted that patients sought medicalisation of their infertility, viewing the medical surveillance as a relief from their isolation and legitimizing the use of IVF (Becker & Nachtigall, 1992).

In the next Section, I introduce a couple diagnosed as infertile and who went through five cycles of IVF over four years. The next two chapters (Section 1) follow the numbers in IVF. Through an examination of numbers, both big and small, I explore how enumerations anchor the social experience of IVF, and yet also what they leave out.

Section 1:

Melissa: Numbers both big and small

I met Melissa early in 2015 before I began my fieldwork. We were (are) about the same age and with similar backgrounds — both of our parents were from South Africa, though our immediate families had left for the United States, where we both grew up in the US South. Mutual friends had introduced us at the time that Melissa and her husband moved to Cape Town, where they did not know many people. We were walking from their flat in a seaside town along the Southern Peninsula to have lunch at a nearby cafe, when she asked what I was studying. When I told her IVF in South Africa, she grabbed my arm. "Really? IVF? We may have to do that," and began peppering me with questions about the procedure and options in the Cape. Did I know the best clinic? What was the procedure like? How to ensure that their first attempt would work?

Just prior to our initial meeting, she and her husband Christopher had discovered that they could not have children "naturally," meaning through coitus. After a year of "trying" — she had removed her contraceptive intrauterine device after their wedding in the Eastern Cape — and without any pregnancies ensuing, she told me that she began to worry there was something wrong. They went for testing at one of the private fertility clinics in Cape Town. After a semen analysis, the clinic reported that Christopher was not releasing sperm cells. There was no sperm in his semen. The doctors said there was could be a blockage in his vas deferens, the tube that connects the testes with the urethra, and he recommended IVF. For Melissa, this was all too quick. They had, in a matter of days, moved from trying "naturally" to IVF; hormone injections, surgical retrieval of oocytes, laboratories. In sum, it was a whole new vocabulary for having a child. Instead, Melissa and Christopher sought out a specialist who could potentially remove the blockage. After surgery, the doctor reported that there was no blockage; there was simply no tube. Subsequently, they identified the issue. A rare gene for cystic fibrosis meant that while Christopher did not actually have the disease, he was both a carrier and had one very rare symptom: He lacked a vas deferens. Without that tube, the only way to retrieve Christopher's gametes was through a surgical procedure, a testicular biopsy, which would remove pre-ejaculate sperm cells from the tissue and use them in IVF. More specifically, they would have to use the ICSI procedure, meaning intracytoplasmic sperm injection, whereby the sperm cell is manually injected into the oocyte.

"So, that was really like . . . really shocking to hear that," Melissa said just a few days after Christopher's surgery, when the physician had successfully biopsied the testes and removed enough tissue to have several sperm frozen and ready for use. "It is to be told and know now that we can't naturally have kids. It felt like the death of a dream," she said. The dream, she said, was having kids "naturally" — sex, missed period, at-home pregnancy test. The dream of "natural conception." In our conversation in her flat, Melissa and I drank coffee, and she slowly poured out her sadness that she now had to embark on this process. "It is really like getting a hit when you go, 'OK, the doctors never ever see this. This is like 1 per cent of cases.' So, I think obviously I didn't expect that this would happen. You kind of never think you're going to be that 1 per cent to not have the tube."

Instead, Melissa moved on to other statistics; she hoped she would be that 35 per cent of people that were successful per IVF cycle. But what were *her* chances of success? She noted her pluses. *She*, on the one hand, was fine; the initial testing had revealed no issues with her reproductive system. And at 28 when their process began, Melissa felt she had youth on her side. Her hormone levels were all at their correct levels, and she had no other reproductive health issues that could affect their chances. She had Type 1 diabetes, which fertility doctors noted could be a factor, but she had managed well over several years to keep her glucose levels in safe ranges. She ate well and exercised regularly. We often went hiking together in the nature reserves around the city. Melissa was also grateful they even had a chance to undergo IVF. There were several clinics in the Western Cape within easy driving distance of their flat, which was not the case from where they had just moved. In their former home, they would have had to drive at least three hours to the nearest clinic. Furthermore, they could afford IVF. Chris and Melissa had been saving to build a house back in their hometown, so had cash stashed away and could use it towards treatment instead. They both had secure, high-paying jobs and tried to maintain a frugal lifestyle.

She would, through the next two years, go through a vast education about procedures and options, hormones and genetic tests, and a flurry of choices, medical decisions, and the worries drawn from the Internet's sage advice, all within the world of IVF and high-tech conceptive technologies. In February 2019, they had just completed their fifth cycle. Five hormone stimulations and oocyte retrievals, five cycles of ICSI, and five embryo transfers. On their fourth cycle, Melissa fell pregnant. Her son is now 18 months old, and they're having their fifth cycle to try for a second child. During those two years of IVF for their first born, Melissa did everything she could to prepare and "optimise" her body for IVF. Melissa quit drinking coffee, in my mind a considerable sacrifice for someone who lugged their Moka Pot on a camping trip to ensure they had decent coffee. She tried acupuncture. She read online about immune response and wondered if her uterus was killing viable embryos. She took up crocheting, making a beautiful navy and teal blanket for her first baby, and colouring books to counter stress that she worried could negatively affected her oocyte quality. Melissa also found a new church with her husband and ran her first half marathon. When we spoke after her cycles, she sometimes teared up over the fate of poor quality embryos and became anxious over the number of eggs she produced each cycle. At every clinic I observed at, she would call and ask what they did differently than the last. Did they have EmbryoGlue?[41] Did they prescribe progesterone after embryo transfer? Which hormones did they use to stimulate? I tried to answer as best I knew; but, I was concerned always that my responses caused more worry than alleviated it. Regardless, it added to the confounding variation of treatment options, new technologies, and methods for improving chances.

Many months later, when she was nearing the end of her first pregnancy, I chatted with Melissa on the phone. The conception far past, we were discussing C-sections and obstetric options in East London, to where they returned when Melissa was five months along. The worries of IVF had been replaced with discussions about planning sleep arrangements, reaching at least 38 weeks in the pregnancy before birthing, and impending breastfeeding. I asked her how it felt to be so close to giving birth after all she had gone through to fall pregnant. "It doesn't even seem real," she said. The experience of IVF had almost disappeared, a near-forgotten yet painful experience, but one that had been overcome.

Her son is now 19 months. We met back in Cape Town in February 2019, when they visited for more than two weeks for their fifth round of IVF in an attempt to have a second child.[42] Christopher watched over the *braai*, chatting with my partner about his business. Their little boy was enjoying a bath with grandma watching over in the nearby house, an AirBnb rental near their old flat. During the *braai*, Christopher received and read aloud a text message from the clinic, a report on their current embryos. Doctors had aspirated six follicles, five had been fertilised, and all five seemed to be growing fine. Two 6-cell embryos and three 8-cell embryos at Day 3, meaning the embryologists would allow them to grow until an embryo transfer on Wednesday. Melissa was excited that for the first time, they may have some "extra" embryos to freeze. If this transfer failed, she would not necessarily have

---

[41] At the time of my fieldwork, EmbryoGlue (a culture medium for embryo transfer, produced by the Sweden-based Vitrolife) was a much-talked about addition to IVF procedures. The medium is advertised as assisting with implantation of the embryo in the uterus, though studies conflict on its impact on pregnancy rates (Safari et al., 2015). EmbryoGlue is among the so-called "add-ons" that the British Human Fertilisation & Embryology Authority institute reviewed as adding costs while not yet having a clear positive effect on IVF outcomes (HFEA, 2019).

[42] Spoiler alert: It's a second and third. Melissa is pregnant with twin girls.

to do the whole cycle, thus cutting out stimulation and aspiration. What a vocabulary they had absorbed! Christopher marvelled at the fact that when he spoke to other friends about IVF, they only had one question: Are you pregnant or not? The two of them liked chatting to me because I understood the stages, they said. That it is not pregnant or not; it's: How many follicles? How many eggs? How many embryos? How many cells? How many to transfer? Any to freeze?

Melissa was telling me how much less stress she was feeling this time around. I reminded her of the things she had sacrificed (coffee!), and she had completely forgotten. Christopher teased her about the acupuncturist. "I know now that it [IVF] works," she said. "It's a numbers game, and there's no way to know why, but at least we know now it works." The proof was in their son, after all. My partner chuckled at that; the proof itself was a person, now walking, and talking a bit. And one who soon erupted into a wail of tears from the nearby bath because he had gotten some soap in his eyes.

Numbers as anchors

Melissa was among a number of women I met who confronted an aspect of the IVF experience that has been troubling both patients and scholars since the 1980s. In essence, IVF fails more often than it succeeds. And with each failure, patients return right back to the beginning of what Sarah Franklin has termed the "obstacle course" of IVF, where each stage — hormone stimulation, aspiration, fertilisation, incubation, and embryo transfer — becomes a hurdle that one must dodge or jump over in each attempt for the ultimate goal of a child (Franklin, 1997:105-108). In Franklin's study, despite that each cycle brings patients back to the beginning of the course, patients feel like progress continues if the cycles progresses further along the course than in the previous try. If they aspirated seven eggs last time, and 10 this time, at least they progressed; if they made it as far as aspiration last time, and this time to embryo transfer, at least they progressed; even if the cycle did not result in pregnancy or live birth.

In this first section, which has two chapters, I explore potentiality via the use of numbers. If potentiality is the apprehension of a possible future, or various trajectories that have yet to come into being, I am interested in the ways that this is "seen", assessed, and apprehended in the clinic. How do numbers — both large and small in scale — anchor and shape social experiences in the IVF clinic? What do calculation systems tell us about potentialities in ARTs?

Obstacle courses, roulette tables, and prognosis charts

In some ways, the questions I ask here have been examined by other scholars. Summarised in Sarah Franklin's recent book, the question of why patients, particularly women to whom the burden of IVF so directly falls, continue to undergo cycle after cycle despite repeated failures, has been asked in numerous settings (Franklin, 2013:212-220). Franklin writes from her long engagement with IVF, beginning in the 1980s, when feminist scholars, activists, and anthropologists were asking pointed questions about the role of reproductive technologies and gender liberation. Many coalesced under the banner of FINRAGE, or the Feminist International Network of Resistance to Reproductive and Genetic Engineering (for a thorough history of FINRAGE, see de Saille, 2017), and viewed the new reproductive technologies as part of a larger process of patriarchal medicalisation and capitalist exploitation of women's bodies (Asberg, 2010). Yet, as Franklin traces, the enduring paradox of this view was why so many women were willing to engage in the potentially risky, painful, and often failing IVF treatment (2013:211-212). Her monograph (1997) along with other scholars, such as Charis Thompson (2005) and Gay Becker (2000), provided a much more nuanced view of men and women's engagement with IVF that complicates the binary of liberation / exploitation narratives.

From her earlier research, Franklin argued that IVF staging, via this series of hurdles, "has the effect of a treatment being seen as successful if it progresses beyond some of the obstacles, *even if it later fails*" (1997:108, italics in original). The technology itself, where each attempt can provide clarity or ever more progress along the obstacle course, becomes a lure, pulling patients along into a battle of endurance. The high emotional stakes of IVF, the persistence of patients, and the pull of technology led to Franklin's (1997) characterisation of IVF as a "hope technology." Hope works in multiple ways. It provides a romantic narrative of heroic scientific pioneers (doctors) assisting the desperate infertile women to overcome obstacles, who with their grit and courage, persevere against odds; it works in tandem with the trope of the desperate infertile woman, one who can cling only to hope — the hope that IVF can provide. Thus, hope allows for the increasing normalisation of IVF as it coaxes along familiar cultural narratives, becoming settled as the technological "helping hand" for deficiencies of nature. IVF operating as a technology of hope is an idea that works both on the individual level, but also on the larger cultural level. Franklin argues that what the hope in IVF symbolises is a larger societal hope for technological and scientific progress. In her most recent book, Franklin (2013) both looks back at and updates this argument with the contribution of affect theorists Lauren Berlant and Sarah Ahmed, the latter in particular, who thinks about the temporal dimensions of happiness and the object to which that happiness is attached. That is, according to Ahmed (2010), happiness is an orientation, an aiming towards objects that it is believed will bring happiness. Taken in this regard, IVF provides an *orientation* toward future happiness, that is, "to follow the path of IVF is precisely to move toward that which is not yet present, and thus to associate oneself with the happiness that is presumed to follow, even if the object of feeling never materializes" (Franklin 2013:216). Thus, hope also works to shape a temporal orientation toward the ever-elusive future. IVF's enduring popularity, she argues, can be seen in this light, as it provides an elusive glimpse of that which is desired — pregnancy. In that way, I read the way that IVF provides an orientation towards a future happiness as aligned to Adams, Murphy & Clarke's (2009) depiction of biomedicine's anticipatory regime. In that reading, IVF orients one to an uncertain future. The affect of being "a little bit pregnant" (Franklin 1997), and infertile women witnessing the stages towards that pregnancy (the "obstacle course"), changes the markers of success and shifts their objective, from simply giving treatment a try, to such that IVF instead "intensifies the very deficit it is intended to mitigate" (2013:218). In that way, Franklin's analysis demonstrates how IVF exacerbates the affective registers of potentiality as a "presence of an absence," or, as Mikkelsen describes, "a shadow in the actual" (2017:650). Instead of ameliorating a medical condition, IVF aggravates infertility's presence.

What of the present calculations that serve as a form of medical prognosis? Several early scholars have noted how the issue of low success rates prompted patients to employ gambling metaphors to describe the uncertainty and potential of IVF. Among these scholars, Judith Modell (1989) demonstrates how both physicians and patients use number of pregnancies as a figure for success; however, each actor interpreted the odds differently. "Physicians utilized a statistical meaning of odds, whereas patients applied a subjective measure, their own individual chances of success," she observed. That is, whereas doctors saw a generalised statistical field and the success rates of their procedures, patients saw their chances for their "own child." In turn, patients sought to assert control over the experience though a narrative of overcoming the odds. This theme of persistence against constant and likely failure was Margarete Sandelowski's (1991) focus in her research on experiences of IVF in the 1980s in the United States. She argues that pronatalist ideologies may act as push factors for IVF usage and persistence in trying for children via the technology; however, the technology itself and its "never enough" quality is also a factor, its presence pulling patients to continue using the oft-failing treatment method. Sandelowski describes this quality as follows:

> Conceptive technology can also be viewed from the inside, however, as having its own pull. Like the gun, conceptive technology requires human beings to determine and achieve its purposes, but it also has an inherent quality of never being enough. In treating infertility, this "never-enough" property contributes to the problematic conflation of good treatment for infertility with quantity of treatment. I suggest that this confusion of the good with the sufficient is at the heart of issues of persistence in treatment that confront both couples and their caregivers (1991:31).

Like Chekhov's gun, IVF is present, thus it will be used. Or, to use Strathern's term of prescriptive consumerism that "dictates that there is no choice but to always exercise choice" (1992b:38), the presence of the technology compels its use. Sandelowski also analyses the use of success rates and statistics in clinics, some of which baffles patients in the variance, lack of transparency, and shifting markers of what constitutes success. Doctors often used clinic statistics stacked against "natural" conception rates to demonstrate that IVF is just as, if not more, successful than "nature," or said differently, to show how much nature fails and is wasteful (Sandelowski, 1991:40-41). Numbers, she argues, tend to obscure an unenumerable *quality* of treatment.

Success rates could constitute a form of medical prognosis, a forecast for treatment trajectories. In this way, my interest in success rates was largely inspired by the work of Lochlann Jain (2013) and her work on cancer in the United States. In her monograph, *Malignant*, Jain works through the temporal disruptions of prognosis, or predictions given for the chance of life in certain segments of time. At the time those prognoses are given, the cancer already has a timeline. Yet still, one faces figures like 34 per cent chance of living for five years. Those numbers, Jain suggests, mean very little when one reflects on the fact that in five years, one will either be dead or alive. "The prognosis purees the I-alive-you-dead person with the fundamental unknownness of cancer and gloops it into the general form of the aggregate," she writes evocatively, describing the whiplash of temporalities and tensions between the self and the aggregate (Jain, 2013:29). She describes this as "living in prognosis," by which she means the affective tensions between the terror of uncertainty and the coldness of not finding one's self amid the abstraction of aggregation (Jain, 2007). Her depiction of life in prognosis time similarly would describe those facing down infertility treatments: The volume of feeling against the backdrop of simply plotted graphs, the seduction of trying while being told it is likely to fail, and the whiplash between present desires, hoped-for futures, and regrets of not trying sooner. Living in prognosis demonstrates the disenchantment[43] and the precarity of using statistics as anchors.

Numerical trajectories:

> Being assertions of the real, [figures] fill the space between the unknowable and the axiomatic, imagination and anxiety (Comaroff & Comaroff, 2006:209).

In this section and within two chapters, I explore two scales of numbers that circulate in IVF experiences. The first is the success statistics. How successful is IVF? Or, from the perspective of the patient, what is *my* chance of success? These are, of course, two very different questions. The first lacks a subject and asks only for the success rates of a procedure. The second takes into account the individual, the patient, their diagnosis, age, and other factors, into a question of futurity. As I show, the two never quite overlap. In the second chapter, I look at the way numbers govern the navigation of IVF for the patient via the repeating enumerations along the "obstacle course" to success. Sperm analysis, follicles, eggs, embryos become enumerated in what I call the "small data journey" of IVF, which frames an "embryo economy," producing waste, value, and excess. Here, embryo viability is produced via technical processes, patient participation, and the enrolment of Darwinian logics. These numbers also partially invisibilize a different kind of valuation taking place, that is, in what kinds of children are desired.

What can a focus on the numbers of IVF offer a classic question of feminist anthropology in the study of reproductive technologies? I argue that paying close attention to the ways that numbers anchor social experience can shed light the relationship between calculation systems in biomedicine and affective regimes, such as hope and children. The latter serves as an unquestionable affective

---

[43] I use this word deliberately in such a way as to contrast the allure and seduction of technology (hope) with the success rates. See Chapter 3 on success rates in the regimes of truth and hope.

authority (Malkki, 2015) in reproductive technologies to such a degree that family formation discourses obscure ARTs from political critique (see Deomampo, 2019).

Chapter Three: Success rates in regimes of truth and hope

> Chance can be the occasion for the beautiful music of human wisdom. But is it, as Nietzsche feared, all-too-human? Doubtless the irreducibly inventive dimension of our relation to chance, where we occasionally look for urgently needed wisdom, is deeply fraught, particularly when social and political stakes are high (Ramey, 2015:2).

Dr du Toit was one of the first people I met in the IVF industry in South Africa. When I met the doctor, we discussed my research project and my interest in success rates and statistics. He did not quite understand why I was interested. The success rates were clear; he said: "I can tell exactly what your chances of getting pregnant are because you are a woman younger than 38." He never did tell me what those chances were. Dr du Toit and I continued our chat, and when we went to visit the head of the embryology lab, he explained a few of the rules. I, the visiting anthropologist, would have to wear the surgical scrubs and shoe covers; no perfume or perfumed deodorant was allowed, he said, as the aroma could potentially negatively affect the embryos in the lab. This worry had come from the earliest days in South Africa's fertility clinics. Years of experimentation had yet to yield any viable mouse embryos in the laboratories of the 1980s. The doctors doing the earliest research on IVF in South Africa later told me that they suddenly realised the gloves were toxic to the embryos; the powder used in lab gloves to allow for easy removal was killing the mouse embryos. They removed the gloves, and the embryos grew in vitro (Kruger et al., 1985). Note the tensions: At the same time as I was told success rates were clear, I was also told of contingencies that would affect chances — some accidental misfortune, a scent or deodorant that could come through the air, the vagaries and unpredictability of everyday life. The knowledge of misfortune changed clinical protocol. Most embryologists I met worked without gloves.

Statistics are supposed to domesticate chance. At least, that is what Ian Hacking describes in *The Taming of Chance*, which is a history of the ascending "imperialism of probability" (1990:5). He traces how the enumeration of laws of nature and society rendered them predictable, controllable, and ordered. State power asserted its sovereignty through the production of this "avalanche of printed numbers" (Hacking, 1982:279), counting everyone within discrete categories — births, deaths, illness, for instance. Statistics served not only institutions of power, but brought the chaos of daily life under order. In the case of global health, statistics have become key technologies, used to structure "best practice" and evidenced-based systems and providing coherence and increased efficiency across disparate contexts (Erikson, 2012).

Trying to understand how potentiality materialises in the fertility clinics of South Africa, I was immediately drawn to the ways statistics operated in various moments. How successful is IVF in achieving the seeming objective of what some call a "take-home baby?" Unfortunately, not very. Despite every step taken in the laboratory to keep that very air clean — filtration systems, pressured air to keep "dirty" air out, warmed air and dark spaces to somewhat mimic uterine conditions, all known risks kept at bay — there is always some chance of human error, unknown factors, or that it simply may not (did not) work. However, the neat dichotomy between the unpredictability of life and the certainty of modern biomedicine does not hold in this ethnographic account. IVF "success" is indeed unpredictable, as most of the medical professionals I encountered readily admitted. However, I have constantly been struck by the certainty that IVF statistics have been presented, in contrast to the stories from patients and the uncertainty that characterises how they envision the future. Like Ramey (2015) suggests in the epigraph above, when stakes are high, people look for narratives, objects, areas where some certainty can be provided. Most patients of IVF, when they want to know the chances of success, if they're younger than 38, face the stock standard answer of 1 in 3. Meaning one in three cycles is successful. But it may also mean that patients would likely need three rounds of IVF to achieve the success of a live birth. These two ways of describing success rates are, of course, different, as I examine in this chapter. Several patients I interviewed said they would Google success rates; others, when I asked, stated they specifically avoided it. Had they chosen to Google, they may have come across the statistics from SASREG. There, they could find the most recent[44] statistics on success rates in the 15 fertility clinics that contributed to the findings for the South African Registry for Assisted Reproductive Techniques (SARA). In the Overview on page 15 is "Pregnancy Rate/Aspiration rate", exactly at that stock standard answer: 33.4 per cent.

How could the two scenarios — measured probability for predicting the future and the chanciness of everyday life — hold together? How are these both "facts" of the fertility clinic? Statistics are often taken as facts produced through scientific method that are made to move, or as Charis Thompson writes, "Facts tend to stick, to travel well through time and space and to work" (Thompson 2005:32). I am interested in the kind of work that the particular "fact" of "IVF success rates" does and the kinds of relations it produces in interactions with individual stories, clinic experiences, and subjective cycle histories. Statistics and success rates could be said to be objects created in scientific truth regimes that indicate the future, where one can be successful or unsuccessful in a treatment outcome. Yet, as Lochlann Jain (2013) has noted, despite their seeming obviousness, statistics tell you very little about *you*, about your life and your case and your future. I explore this later in the chapter. I am exploring the different conditions in which patients oscillate between the "us" — the aggregate of statistical life — and the "I" of one's own narrative.

---

[44] The 2014 figures were published in 2017.

Counting success

First, one must count. Count what? To project success rates statistics, clinics and monitoring agencies gather information on the number of successful uses of IVF over the number of attempts. In this section, I will disentangle the ways of counting successes and attempts and narrate the various modes of representing these.

First, I look at the denominator — attempts at IVF. Generally, in IVF patients, doctors, and clinic staff speak in terms of cycles. The WHO asks local IVF authorities to detail what specific progression of cycles is used in their local success rate statistics (Zegers-Hochschild et al. 2009). This is because a "cycle" refers to a process, and a process that does not always continue to the expected end point (embryo transfer). Interestingly, the WHO delineates various forms of what constitutes a cycle — a frozen embryo cycle, an aspiration cycle, an initiated cycle — but offers nothing to define what "a cycle" is in particular (Zegers-Hochschild et al. 2009). In the clinic, patients and doctors sometimes spoke of cycles in terms of "tries," but "cycle" generally refers to the several-days-long IVF process, from hormonal stimulation (which typically begins on Day 3 of one's menstrual cycle) to embryo transfer (this day varies more widely, but is usually around Day 17 to Day 21 of a women's menstrual cycle). For instance, "initiated cycles" refers to the total number of times a patient begins this process, generally through hormonal stimulation of the ovaries through pharmaceutical means. Some patients will not get further than initiation, which the WHO defines as "cancelled cycles," if they failed to proceed to aspiration (Zegers-Hochschild et al. 2009). Neither the South African registry, nor the European registry for ART monitoring (de Geyter et al., 2018), explicitly count the number of cancelled cycles, at least not in their published reports. From the data provided by SASREG, it is not possible to establish the number of cycles that failed to proceed as far as an aspiration.[45]

The next "stage" in a cycle is aspiration, when doctors perform a minor surgical procedure on women to extract follicular fluid and oocytes using a vacuum aspirator and a vaginal ultrasound. The next "stage," for the purposes of recording success rate statistics,[46] is embryo transfer; that is when the embryo(s) are put into a uterus (in the next chapter, I explore how the clinics grade and select embryos). There are also frozen embryo transfers, where a previously produced embryo has been frozen, later thawed, and transferred back to the uterus. From the perspective of a woman patient, this means that they have been able to "skip" the ovarian stimulation in this given cycle (although they will likely take some hormones to prepare and thicken the uterine lining) and the aspiration. These cycles are generally recorded as "frozen embryo cycles." Post-aspiration, a different set of days are enumerated. Previously, "Day X" had referred to the women's menstrual cycle. Once aspiration takes place, it is Day 0 for the fertilised embryo. At that point, patients, doctors, and embryologists begin to speak of days in terms of the embryonic development *in vitro*. The focus thus switches from the would-be mother to the embryo, as reflected in the modes of counting.

So how and from when does one count? Take, for instance, counting the days of the menstrual cycle. What "counts" as the menstrual cycle and then what "counts" as a day? On more than one occasion in the clinic, I observed doctors and nurses instructing patients how to count to get to Day 3[47] of their menstrual cycle. Day 1 refers to the first day of the menstrual cycle. Sometimes doctors had to clarify that "spotting" does not "count" as menstruation; but a period starting in the evening

---

[45] Figuring them out on one's own *could* be simple enough: Subtract the number aspirations (for IVF and ICSI) from the number of initiated cycles. Only nine of the 15 centres in South Africa reported their figures for how many "initiated cycles" they had had: Four did not submit numbers and two said they did not record them (SASREG, 2017). Part of the difficulty is that SARA reporting is voluntary and not all clinics enumerate the same things.

[46] I specify here that this is for success rate statistics that I have encountered. For laboratory key performance indicators (KPIs), rates of successful fertilisation are also monitored.

[47] In all the protocols that I observed, women's hormone injections began on Day 3 of their menstrual cycle.

still "counts" as Day 1. Thus, what counts as a day of menstruation in terms of IVF is not self-evident; it must be taught, and may not correspond with how the women understood their own cycles.

What "counts" as an IVF cycle (in contrast to a menstrual cycle) when counting success rates? In terms of gathering numbers, the SARA[48] includes the overall (in terms of all contributing clinics) pregnancy rates (as the numerator) over embryo transfer and aspiration (the denominator) (SASREG, 2017). Most of the scientific literature contains both of these figures — one version of pregnancy rates over aspiration and another as pregnancy rates over embryo transfer. In practice and in the clinic, medical professionals usually referred to the success rate as pregnancy rate over the number of embryo transfer cycles. As one embryologist who collected the statistics for their clinic, indicated, "Some people have cycles, but it comes to a point where embryos stop growing [*in vitro*]. They never have embryos back [no embryo transfer]. So I don't include that [in the clinic's success rates]. You can't be pregnant if you never had embryos back." A failure to have a cycle proceed to embryo transfer could ensue for multiple reasons, such as a lack of viable oocytes, fertilisation failures, or a lack of viable embryos. The end result of all these scenarios, however, is a lack of viable embryos to transfer.

---

[48] SARA is a project run by Dr Silke Dyer through SASREG. Dr Dyer also runs the newly formed African Network and Registry for Assisted Reproductive Technology (http://anara-africa.com/). Regional bodies gather data on uses of ARTs (for example, European IVF Monitoring and the Latin American Registry of Assisted Reproduction) and feed them to the WHO's International Committee Monitoring Assisted Reproductive Technologies (ICMART).

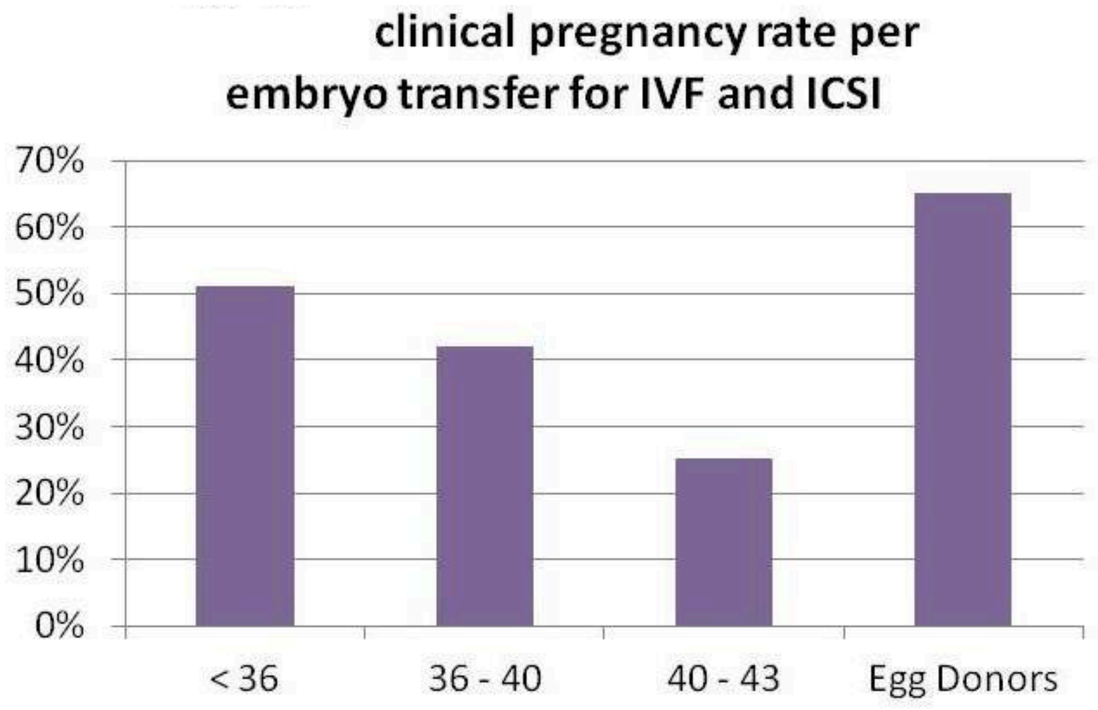


Figure 11. Image from a South African fertility clinic showing clinical pregnancy rate per embryo transfer by the age of the women producing oocytes (age of intended mother or egg donor), under a page called "Success rates." Image taken 13 March 2019.

The seeming obviousness of this arrangement is that one cannot be pregnant unless a viable embryo is in a receptive uterus. The ingredients must be present. To borrow from Franklin's observation (2013:323), that while it clearly takes an embryo and a uterus to make a baby, this also only works in retrospect. Success may seem simple — sperm plus egg equals baby. It also does little to explain "why reproduction sometimes works and sometimes fails" (2013:323). Failure seems much more complicated — labs, hormones, lifestyle, and luck. Among reproductive failures, the failure to make it as far as an embryo transfer often means that one fails to "count" as potentially pregnant. Potentially pregnant refers to the embryologists' delineation, discussed above, between cycles that "count" and cycles that do not count for success rate monitoring; those who have had an embryo transfer, in Franklin's framing, are "potentially pregnant" in so far as they have had a viable embryo transferred. “Potentially pregnant,” for the purposes of measuring the number of cycles that count, is signalled by the presence of an embryo deemed viable (see next Chapter on the calculations of embryo viability).

Now for the numerator, the “success” for success rates. What constitutes IVF “success?”

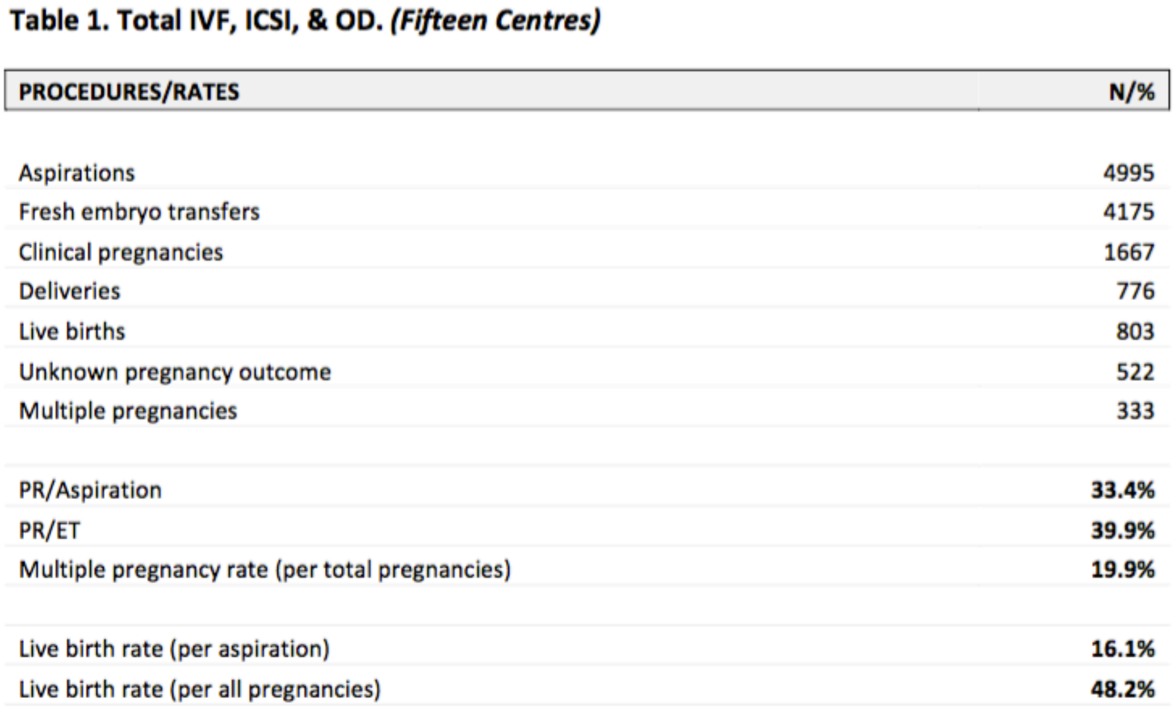


Table 1. Total IVF, ICSI, & OD. ***(Fifteen Centres)***

PROCEDURES/RATES	N/%
Aspirations	4995
Fresh embryo transfers	4175
Clinical pregnancies	1667
Deliveries	776
Live births	803
Unknown pregnancy outcome	522
Multiple pregnancies	333
PR/Aspiration	**33.4%**
PR/ET	**39.9%**
Multiple pregnancy rate (per total pregnancies)	**19.9%**
Live birth rate (per aspiration)	**16.1%**
Live birth rate (per all pregnancies)	**48.2%**

Figure 12. The overview of statistics from the SARA 2014 report (SASREG, 2017: 13). PR/Aspiration refers to the clinical pregnancy rate over the total number of aspirations; PR/ET is the clinical pregnancy rate over the total number of embryo transfers.

There are, generally speaking, two ways to represent success rates per cycle — either clinical pregnancy rate or live birth rate. The clinical pregnancy rate refers to the number of pregnancies indexed either by a gestational sac or a foetal heartbeat. The heart beat can be confirmed as early as six weeks into pregnancy via an ultrasound. Otherwise, gestational sacs are sometimes checked via genetic testing of foetal tissue after a miscarriage. A miscarriage with a gestational sac would indicate a clinical pregnancy (a success) despite it ultimately failing. The second mode of representing success rates is through the live birth rate. Specifically, this refers to births after 22 weeks, or at least weighing

500g at delivery; if either are met and the infant shows signs of life or spontaneously breathing, this is deemed a live birth (SASREG, 2017). Just under half of clinical pregnancies result in a live birth (SASREG, 2017); the other outcomes are miscarriage (or early pregnancy loss), stillbirth, or "unknown outcomes."

The live birth rate is seen as the "truer" of the two. As Dr Silke Dyer describes in the yearly accounting of clinic success rates, "The delivery of a (single) live born baby at term is deemed the ultimate measure of successful ART" (2017:6). This means the that ultimate barometers of success are the live birth and the avoidance of multiple pregnancies, which has been put on the agenda globally as a concern of IVF practitioners (ESHRE Task Force on Ethics and Law, 2003). Sometimes, when clinic staff discussed other (competing) clinics, they would disparage their use and advertisement of a clinical pregnancy rate instead of the (more factual) live birth rate. "Who gets 68 per cent?" questioned one clinic staff member in reference to a competing clinic's publicly stated success rates. "I don't buy it. They are definitely not using live birth rate."[49]

However, clinics often struggled with ascertaining their live birth rate, thus the high number of "unknown outcomes." Because of the way South African healthcare is organized, and that as many as a third of clinics' patients live in other countries, many clinics simply did not know the live birth outcomes of their treatments. "The biggest unknown in our data remains the outcome of our pregnancies, and I encourage all centres to consider mechanisms for better follow up," writes Dyer in the SASREG report on yearly statistics; ". . . We should not stop short of this important information" (SASREG, 2017:6). In the most recent SARA statistics, within a total of 1667 clinical pregnancies, 803 resulted in live births; but 522 were listed as "unknown pregnancy outcome." For more than 31 per cent of clinical pregnancies, clinics reported no information on the final outcome.

---

[49] Some clinics used their own lab statistics in advertising; other clinics used aggregate data from a regional or national registry. Most often, the success rates given to patients lacked citational information — it was unclear whether the information came from national surveys or the specific clinic's statistics.

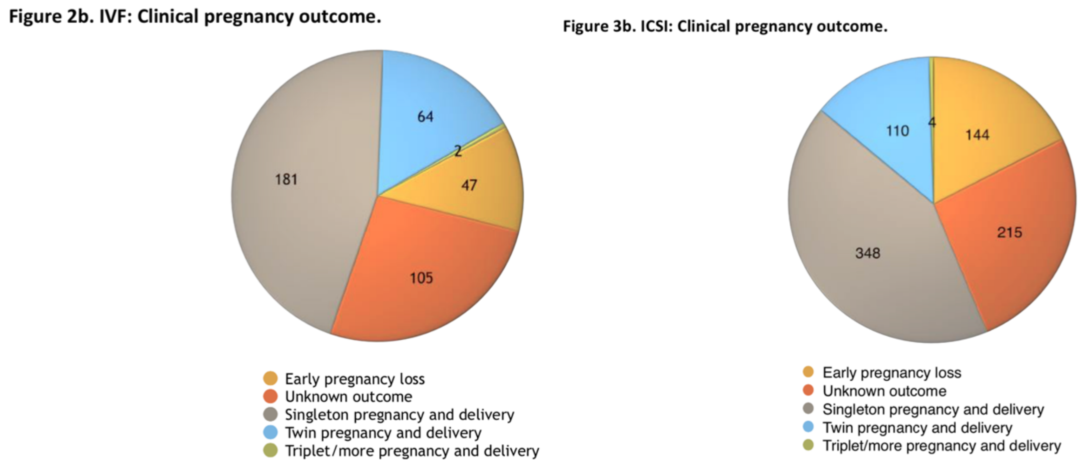


Figure 2b. IVF: Clinical pregnancy outcome.

Figure 3b. ICSI: Clinical pregnancy outcome.

Figure 7. The two pie charts above come from the SARA report 2014 (SASREG 2017). They show the outcomes of clinical pregnancies (those IVF cycles that became registered as clinical pregnancies). The left is for IVF cycles; the right for ICSI cycles. Both have significant recordings of "unknown outcome."

According to medical professionals I interviewed, most patients in South African IVF clinics —that is local patients, as opposed to foreign-based patients—moved on to different obstetricians and gynaecologists after about seven to 12 weeks of pregnancy. One of the embryologists that I worked with struggled to find out the results of the pregnancy beyond clinical pregnancy and attributed the lack of information to the move to gynaecology/obstetrics. Generally speaking, she explained that because of the referral relationship between local gynaecologists and the fertility specialists, the clinics were given information on the stages of pregnancy and eventual live birth. However, that was not guaranteed, particularly with patients coming from different countries. She said she would make the effort to email gynaecologist/obstetricians, email and call patients, and sometimes even resorted to finding patients on Facebook to find out if a live birth occurred.

Success rates are most often situated in relation to women's ages. That is, while the figure shows number of outcomes (live births or clinical pregnancies) over the number of cycles (either at the point of aspiration, or the point of embryo transfer), these are often placed in context of the age of the women's genetic contribution (either the egg donor or the female patient). If a donor contributes, the age of the donor is the factor, whereas if it is the intended mother that uses her own oocytes, then that age is the factor. Thus “age” is actually an indicator of “egg age” rather than an indicator of the persons age or the age of the “carrier.” SASREG, in its ART monitoring reports, shows pregnancy rates in three sections: Below 35 years, between 35 and 39, and older than 39 (see Figure 8), whereas, again, age refers to the age of oocytes, a fact that is not made clear in most representations.

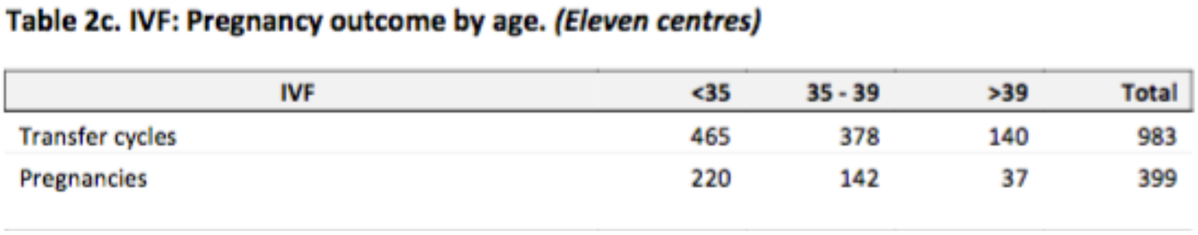


Table 2c. IVF: Pregnancy outcome by age. ***(Eleven centres)***

IVF	<35	35 - 39	>39	Total
Transfer cycles	465	378	140	983
Pregnancies	220	142	37	399

Figure 8. Table from the 2014 SARA showing pregnancy by age, where "age" refers to "egg age" (SASREG, 2017).

Clinics also have their own internal measures and key performance indicators (KPIs)[50] to measure success. Once, I was discussing a case with an embryologist where only two eggs were extracted. Debra, the embryologist, described the woman as a “poor responder” (a clinical term[51] for a woman that does not respond well to hormonal stimulation and is not expected to produce many oocytes) and “older.” I asked Debra, What constitutes “old?” When does one become “older?” She responded, “Well, technically speaking, she’s ancient. She’s 45. Anything over 40 is old. Our cut-off is 38, but for others [clinics], it’s 35.” The clinic at which Debra works reports on data gathered for ages 38 and below and 39 and above. As she notes, other clinics use different category breaks; there is no single measurement.

---

[50] European embryologists agreed to KPIs such as ICSI damage rate, IVF fertilisation rate, and thawing rate for cryopreserved blastocysts (ESHRE Special Interest Group of Embryology and Alpha Scientists in Reproductive Medicine, 2017).

[51] Several medical definitions of “poor responder” exist, primarily indexed by the number of oocytes retrieved, the number of follicles before aspiration, or the oestradiol (a form of oestrogen) levels (Oudendijk et al., 2012). For number of oocytes retrieved, studies have used differing limits that vary from between one and five. It is worth noting how terms such as “poor responder” perpetuate blame for oocyte retrieval on women and simultaneously negate the harshness of the stimulation process.

As we have seen in this section, the seemingly "straightforward" and fixed success rates conceal a wealth of methodological decisions about how such numbers are presented, what "counts" towards their creation, and what testing indexes certain benchmarks, such as "success." It also points to numerous assumptions and gaps of information that come as a result of healthcare infrastructure and the international sector of patients. Furthermore, probing how these numbers are made speaks to the processional stages of IVF and into pregnancy, whereby each stage can go "off course" and thus render these processes incessantly insecure, much like the characterisation of IVF as an "obstacle course" (Franklin, 1997:105-110). In the next section, I discuss what kind of work these success rates do in the clinic.

Triangulating trajectories

During interviews with fertility specialists, I often asked them about their own histories and interests, what brought them into the work of fertility, and what they liked and did not like about their work. I think at times they found it puzzling that I would even want to know, as it was often assumed that the objects of study were patients, not doctors. When discussing the challenges of their work, inevitably every single doctor would come to the dilemma of how to balance expectations — the hopes of patients in their hefty financial and emotional investment — with the "reality" of low success rates in IVF and the likelihood of repeated cycles with little or only speculative explanations of why the previous one failed. Doctors feared providing "false hopes" to patients. They knew that the procedure was not only expensive but emotionally weighty. Said one doctor, "You've got to be very open with the first consultation, and do sort of a risk assessment. If you see there are definite factors that is really saying, 'Wow, we're in trouble here!' You've got to discuss that from the start. And I think for me the most important thing is sometimes people perhaps don't like it, but the worst thing for me is to provide false expectations."

Doctors and other medical practitioners believed that providing "false hopes" was indicative of unethical medical practice. If a patient switched clinics after multiple failed cycles, sometimes the doctors at the second clinic would deride the previous doctors for presenting false hopes and ultimately disappointing patients' expectations. The above doctor's mention of a "risk" analysis is notable. Businesses use the expression "risk analysis" to identify potential risks as a practice to initiate ways to mitigate against those risks. Identify the potential pitfalls; avoid the pitfalls. In the case of these doctors, they sought to identify whether patient expectations accorded with medical assessments of the "reality" of their situation. For patients, fluctuating expectations were a "reality" of their situation, whereas for medical professionals, "reality" is constituted through the designated criteria, as I describe here.

Doctors can roughly be seen as making three moves that, combined and repeated over time, often serve to keep patients within treatment. Firstly, early consultations are framed as a way for the doctor to identify the elements that shape future trajectories for treatment. These elements include medical factors (such as age of the intended mother, the cause of infertility or subfertility, or other contributing factors such as obesity, concurrent illnesses, or smoking); economic factors (such as financial capacity); and social factors (the couple's relationship, motivation of the intended parents, supportive family, community, or religious structures, and impediments to making appointments, such as work commitments or distance from the clinic). Social factors include ascertaining patients' openness to treatment options that some doctors consider less desirable than "own gametes;" that is, using third-party methods, such as donor gametes and surrogates. Thus, on one hand, consultation provided an opportunity for doctors to medically evaluate patients, to thus understand how long it might take to reach the desired outcome. On the other hand, it was also to ascertain how much capacity the patients had to expend to attain that outcome (economically, emotionally, and psychologically). Medical prognosis and patient capacity are two legs of a triangle. In the third, doctors also tried to establish patients' expectations and manage their hopes for how quickly and how many cycles it might take to achieve the desired outcome — the "take-home baby."

This "triangulation of trajectories," as I call it, is a set of moves balancing of medical prognosis, social judgements, and "hope management"[52] (Franklin, 1997:158-161). Each leg of the triangle fuels the next: Medical prognosis designates one's place within the graph of success rates. These statistics become negotiated within the understanding of one's emotional and financial capacity to expend toward the number of cycles given in the medical prognosis. The resulting graph as a tool of hope management might look different each time, as discussed below. By triangulating trajectories in this way, the anticipated actuality is made imminent. In this manner, doctors use potentiality to maintain the horizon of future actuality (the baby will come the next cycle!) ever further and ever-receding. That is, until it suddenly works.

Doctors fear that mismanagement of the triangle will impede reaching the treatment objective. As a result, patients may "quit treatment," that is, stop going through IVF cycles "too early," or refuse to consider "other genetics" (such as using donor gametes). Dr Muller described this: "That's what people discuss at our [weekly staff] meetings is that patients drop out too soon," he said. "They otherwise lose trust in the process, or lose trust in the clinic. But that is sometimes a frustration, that patients [drop out], not only for financial reasons, but because they lost trust in the process. And any treatments that have 50 per cent or less success rate means that you have to repeat it." Doctors I worked with were deeply invested in having "good outcomes" for their patients. This meant fulfilling the main objective of having "their own" child; but also working with patients to the point that they could accept childlessness or adoption as future options.

---

[52] Franklin coined this expression in her monograph *Embodied Progress*, but I am using it slightly differently. I clarify this difference in the next section.

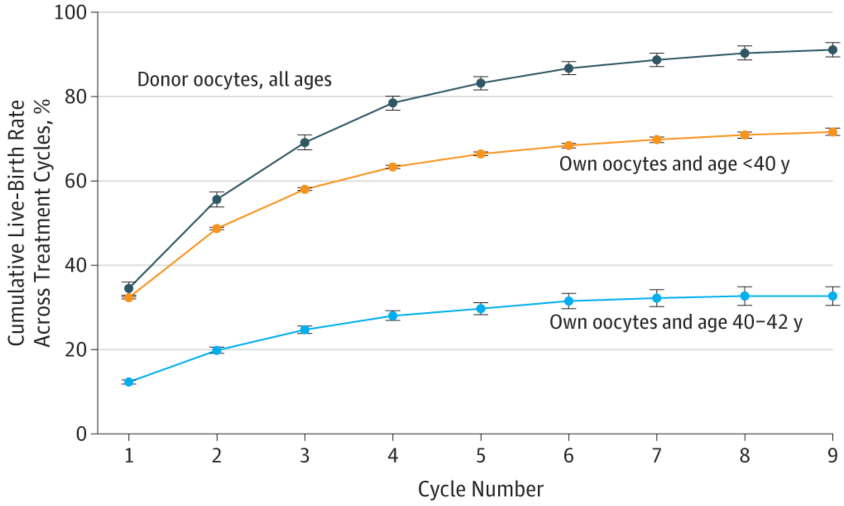
Dr Webb was one such doctor. We had spoken earlier about his patients' expectations of IVF treatment, and he remained deeply concerned that patients "believe what they want to believe." In doing so, he worried that patients' "beliefs" lacked a corollary in "reality" — the stats. I sat with Dr Webb as he engaged several patients during his consultation hours. Deena was a single woman who arrived at the clinic with an iPad in hand to take notes on. She had recently undergone surgery with Dr Webb to remove fibroids and to treat a septate uterus, a condition where the uterus becomes "heart-shaped" and may cause recurrent miscarriages (see Homer, Li & Cooke, 2000). She reported that she felt well after the surgeries, and she had come to the clinic to begin with an IVF cycle with donor sperm. They discussed the coming treatment process, and Deena had a list of questions prepared. What is considered Day 1? she asked in reference to the menstrual cycle that IVF models itself on. Not spotting, but the first "proper" day of one's menstruation, the doctor explained. What is the difference between IVF and ICSI? she asked. Since they are using sperm from the clinic's own sperm bank, it is high quality[53] and thus they can do IVF, a "more natural" way than ICSI, he responded. Who will do the injections? she asked, referring to the follicle stimulating injections. Deena was clear that she would prefer to come to the clinic daily to have a nursing sister administer her injections, rather than do them herself. Then, Dr Webb glanced at me, and asked Deena, "What is success for you? What are you wanting?" She seemed flustered by the question; "I would like to get pregnant on the first time [the first cycle]."

No, no, no, he said; success is a live birth. "That [a live birth] is what we're trying to achieve," he said as he began pulling up a file on his computer. A PowerPoint emerged, and Dr Webb flipped through the graphs available. There was a line graph demonstrating various success rates over age and

---

[53] Some clinics had their own sperm banks. The quality of the sperm, in terms of motility, morphology, number in a given sample, and other sperm analysis parameters, was among the factors that the bank considered when taking in new sperm donors. Most sperm banks wanted "high quality" sperm, in terms of these parameters, but they also took note of the biographical and physical factors of the donor (see Chapters 6 and 8 for more on donation in the clinic). The doctor, in this case, was saying that the sperm in their bank passed their test for use in IVF.

the number of cycles involved. It looked like Figure 9 below. At your age, he explained to Deena while pointing at his graph, you would fall into the 10-15 percent range of success for a live birth after one round of IVF. Deena looked grim. But, Dr Webb said, a majority of patients in your age range will have a live birth after three rounds of IVF; thereafter, it levels off and success rates do not improve greatly after three attempts. Dr Webb turned from the computer screen back to Deena. “I’ll try twice, I think,” she said softly after looking at the graph. “You don’t have to decide now of course, but twice is a good number to commit to,” Dr Webb said. “It has the biggest jump in successes.”



No. of women									
Donor oocytes, all ages	3587	1636	939	554	287	126	53	27	8
Own oocytes and age <40 y	133 379	53 568	19 719	6641	2357	882	335	131	51
Own oocytes and age 40−42 y	15 561	6671	2579	884	301	130	60	36	20
Own oocytes and age >42 y	4420	1578	509	160	67	24	10	5	4

Figure 9. This graph (Smith et al., 2015) shows the likelihood of a live birth by the number of cycles, and also divided by age groups, and whether the oocytes were “own” or donor. This may seem to contradict the previous section where I stated that it was the age of the egg that matters. However, this graph only shows the ages of “own oocytes” above and below 40. Donors are, generally speaking, much younger than IVF patients. In my sample, the average donor age was 22 in contrast to patients, who were typically in their 30s. This is not the exact graph that Dr Webb showed to Deena, but his showed similar information in a similar format. This graph is not specific to South Africa.

Dr Webb explained to me afterwards that success rates level off after three cycles because most of the easy issues would be addressed quickly. For those patients with fertility issues that IVF can “easily” address — blocked fallopian tubes for instance, the condition that the early experimental patients had (Kruger et al., 1986) — they will likely become pregnant within the first three cycles. Thereafter, the patients with more "difficult" prognoses — "poor oocyte quality", for instance — would persevere and endure IVF treatments and few of them would become successful thereafter. In essence, the easiest cases become successes quickly.

From "hopes" to "reality"

Embryologists, like the physicians, also worried about how to present information; how to provide "bad news" in a way that registered with patients, and in particular, how to manage and communicate the "reality" of expectations when many felt their job training did not provide them with the skill set of patient communication. "We just give the numbers here, and let the doctors do that hope stuff," one embryologist told me.[54]

Into this critically early moment between patients and medical professionals, came statistics of success rates. For medical practitioners, statistics and "just the numbers" were a mode of managing hope; they served as a way to side-step providing "false expectations." If the doctors provided clear, straight-forward (seeming) numbers, then patients were seeing "reality." Below are some examples from interviews with various fertility physicians:

> Dr Muller: So if you ask me what is the difficult part it is, the difficult part is that you have to help patients to deal with a lot of disappointment.
> Tessa: And how do you do that?
> Dr Muller: I think that is to prepare them with statistics. To prepare them with real facts.

> Tessa: How do you manage people's expectations?
> Dr Uys: I give them a statistic, and then if I know that they understand it, then it's their choice.

---

[54] This reflects Nik Brown's (2005) assertion that there is both a temporal and spatial dimension to the patterns of hope and truth regimes. The further one moves from the laboratory where the stats are made, the more speculative the discourse becomes. The embryologists would likely agree with this, that the truth was closer to the lab than to the physician's office. The patients were closer to the physician's office, where all "that hope stuff" was discussed, than to the lab, where it was "just the facts."

> Dr Robins: Like someone like Dorothy comes in here [at age] 45 and says, 'I want to do IVF.' You've got to tell them, 'You've got a 1 to 2% chance to have a baby.' Most of them have money to do it, so it's a big ethical dilemma for me to say, 'OK let's do it,' just to do it. No, why do you do it?
> Tessa: So what do you do with that patient?
> Dr Robins: I tell them, 'Listen, don't do it! There're your odds. Don't do it! The graph is here. Don't do it!' And then when they still want to do it, then they sign the red card that says, 'I hear you, but I want to do it.' Then I'm fine. But then they understand.

Unlike recent work in the sociology of medical prognosis, which has demonstrated that physicians largely eschew prognosis (see Christakis, 1999; Timmermans & Stivers, 2018) because they fear sabotaging the treatment trajectory or establishing a "self-fulfilling prophecy,"[55] medical professionals in IVF said they deployed success rates as a way of calibrating patients' expectations. However, the doctors understood that the numbers required some explanation, or that not all patients would "understand" and acclimate their expectations simply upon being handed the numbers. It required some checking to ensure that "I know they understand it," as Dr Uys said. Usually, this took the form of a line graph that showed success rates over the maternal age, a slumping curve downward to single digit successes by the early to mid 40s. Other times, it was a graph of successes by number of cycles, as described in the previous section with Deena. Doctors said they warned of potential failures, the meagre statistical chances of success, and the likeliness of having repeated (and failed) attempts. These were the "facts" as presented in statistical representations, which all the doctors reiterated again and again that they used when discussing patient prognoses. At the same time, many medical professions believed that patients "heard" differently. As another doctor phrased it, "Even if you tell them [the patients], 'You have a 5 per cent chance,' intelligent professional people will say, 'I'm going to be one of those 5 percent.' So they don't often hear that they have a 95 per cent chance that this cycle is going to fail." Medical practitioners felt frustrated by patients' insistence that their case

---

[55] In contrast, Lochlann Jain's work on cancer treatment describes the ever-presence of prognosis (2007, 2013).

would be different, their case would be unique and in defiance of the odds, they would be in the 5 per cent.

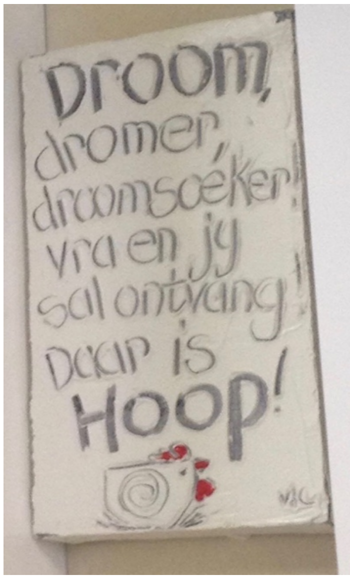


Figure 10. A picture hanging in a fertility clinic office. Translated from Afrikaans, it reads: "Dream, dreamer, dream seeker! Ask and you will receive! There is hope!"

That warnings of repeated failures were presented within offices filled with pictures of babies — the ultimate "successes" and "miracles" of IVF — reflects the ambivalence of messaging. It also reflects my argument that both hopes and "facts" as numbers were necessary to keep patients in treatment. For instance, on one occasion, I sat with a group of nursing sisters to have tea in the break room of a clinic, and they asked me about my study. I explained that it was in part about how couples understood the chances of success – how did they hear 10 per cent chance when they wanted to have a baby? "Well, why else are they here then?" said one of the nursing sisters. "They have to think that it will work. I always tell my patients to stay positive. They're not here for a cup of tea — otherwise, that's an expensive cup of tea."

Statistics then are a specific kind of object. I argue that they are used as a technology of "hope management" (Franklin, 1997). Franklin uses this expression to describe the work of patients in managing their own hopes through psychological fortitude and strategies like "thinking positively"

(1997:159). Here, I am describing the work that doctors (and also variously other clinic staff such as nursing sisters and psychologists) do in managing the hopes and expectations of their patients so as to keep them within a treatment trajectory. For the doctors, patients come to the clinic full of "hopes" and "desires." They have little in the way of knowledge and information;[56] they have feelings, anxieties, and fears related to their potential assessment and the potentialities of that assessment. In this outlook, doctors then provide patients with "facts:" Statistics on the success rates of IVF.

In giving them "just the facts," IVF doctors intended to shift the patients from uninformed and hopeful to informed, rational consumers of fertility care. Thus, while Franklin (1997) provides a nuanced and detailed ethnographic account of the way "hope" operates in the fertility clinic, less has been written about "regimes of truth" (Moreira & Palladino, 2005), what is presently known and calculable, within IVF clinics and how these two tropes interact. Tiago Moreira and Paolo Palladino describe the relationship between what they refer to as "regimes of truth and hope" that are pervasive in contemporary articulations of biomedicine and material practices therein. Using a case study of a failed randomised control trial of neutrotransplantation for the treatment of Parkinson's Disease, the authors characterise the two regimes — of hope and of truth — that are both organising logics of biomedicine, yet seemingly opposed. Regimes of hope relate to the future potentialities, the promise of biomedicine; regimes of truth the calculative presents built from expert knowledge. The authors argue that the relationship between these two regimes, rather than opposing, is instead "mutually parasitic" (see also Moreira, 2006), co-constitutive, and predicated on one another. Nik Brown argues, "the present absence of certainty is itself constitutive of the hope for, and drive toward future truths" (2005:333). Moreira and Palladino explain the truth/hope relationship through a description of the

---

[56] This is a description of how doctors perceived their patients. However, in the consultations I observed, patients' levels of knowledge varied greatly. Some understood little about the process and participated in detailed discussions and asked many questions. Others came in after days of internet research, or they were medical professionals themselves. The more experienced the patients were (the more cycles they had undergone), the more knowledgeable they seemed to be.

various "selves" constituted through each of these regimes. The regime of hope imagines and is presented in tension with "desperate" patients, corresponding to how Franklin argues that the trope of desperate, infertile women facilitates the constitution of IVF as a "hope technology" (1997:202-203). In parallel, in the regime of truth "patients are figured as consumers of health care, concerned to compare the relative merits of pharmacological and surgical approaches [to Parkinson's Disease], by taking into consideration their effectiveness, risk of harm, and cost" (Moreira & Palladino, 2005:68). Within a regime of truth, in contrast to the "desperate" patient of hope, a different patient-self is constituted, that of a rational, knowledgeable, deliberative consumer of health.

Statistics are merely the objects to facilitate that shift. Why numbers? And what are the implications of this shifting subjectivity? The handing down of facts, stats, graphs, and numbers reflects Lochlann Jain's befuddlement at the start of her monograph *Malignant* (2013). In it she describes her growing collection of "cancer literature." Graphs, prognosis statistics, and a chart that despite her squints and stares does not tell her what she wants to know: Will she live just two years or 20? Her question is poised against a background of probabilities that do not, cannot, address the personal question of which side of the statistical dividing line one falls. Furthermore that knowing can then only be a function of temporality; you only find out with hindsight.

> At my next appointment, I asked Dr. Slideshow the somewhat naive, somewhat urgent question, "What does it mean?" The doctor responded in a way that was both helpful and not helpful, depending on the moment that I recall it: "Exactly what it says." Banal as a winter day or the color of the ceiling, survival statistics offer a smidgeon of information, but not much to cuddle with (Jain, 2013:27).

The power of statistics and the deference to numbers in a hierarchy of knowledge comprises a long history of enumeration techniques as part of the accumulation of state power, sovereignty, and modernity (Hacking, 1982; Urla, 1993) and, furthermore, the legacy of "a positivist mania for quantification" in the sciences (Porter, 1995:20). From the doctor's point of view, they were a useful object to transition patients from hopeful to informed, and thus from irrational to rational decision-making, but still within the bounds of consuming specific services. Statistics were seen as contextless, boundless, and applicable to all patients. Their certainty and fixity provided a counter to the uncertain situation of most patients seeking reprieve. These were the practices of doing "good science," the kind of science that ensured informed consent of the patients. Echoed in many critiques of the practices of biomedicine in late liberalism, or what Annemarie Mol (2008) calls the "logic of choice," this paradigm assumes patients as rational actors weighing their choices amid careful consideration of numbers. Statistics were then a part of the clinic's "ethical choreography," (Thompson, 2018), doing the work of ethical practice to ensure informed consent and to contain hopes. Giving "just the facts" also reinstates patients-as-consumers, a blurring between medical-legal models of patients as informed and therefore rational actors, to a neoliberal model of the informed and reflective consumer.

Shaping history to the numbers

Jain (2013) argues that while the statistic means "exactly what it says," it cannot tell you much about your own story, your own life. In her reading, staring at statistical prognosis exhibits a tension between the aggregate truths of big data, and the individual truths of one's own experience. In IVF, the statistics may state a 30 per cent chance of success if you are younger than 38, but for the patient, you either are or are not successful. You either have a child, or you don't. Judith Modell (1989) argued that while both physicians and patients use number of pregnancies as a figure for success, they interpreted odds differently. "Physicians utilized a statistical meaning of odds, whereas patients applied a subjective measure, their own individual chances of success," she observed (1989:129). That is, whereas doctors saw a generalised statistical field and the success rates of their procedures, patients saw their chances for their "own child." One of the women I interviewed even put this in statistical terms. Once you come to a pregnancy test, she said, the chances are 50/50; because it is either positive or negative, yes or no. There is no 30 per cent of a baby. There is a live birth. No, there is a "Big Fat Negative."

"Big Fat Negative" or BFN as it is most commonly written, is one of the many acronyms on the infertility support groups found online. Among the many groups and forums for online infertility support was Fertilicare, a South African-based site that for more than 10 years was where patients,[57] especially women, traded information on clinics, experiences, and cycles. When posting, many participants on the site had signatures (information added to each post), so that each message contained information about their own "infertility journey." These would be written in some variation of the following (I have "translated" them below):

> Cycle 1: June 2016: IVF, 12 eggs, 6 embies, 2 ET, BFN :(
>
> Cycle 2: October 2016: FET, BFN
>
> Cycle 3: December 2016: ICSI, 10 eggs, 4 embies, 2 ET, BFP! :)

> First IVF cycle: Took place in June 2016. The procedure was IVF. During the process, we started with the aspiration of 12 eggs. From there, six embryos developed in vitro. Two were transferred. The pregnancy test came back negative.
>
> Second IVF cycle: Took place in October 2016. From the previous cycle, we were able to thaw and transfer from a frozen embryo. The pregnancy test came back negative.
>
> Third IVF cycle: Took place in December 2016. Instead of "traditional" IVF, we did intracytoplasmic sperm injection (ICSI) to fertilise the egg. We had an aspiration with 10 eggs, which resulted in four viable embryos. We transferred two embryos, and had a positive pregnancy test.

In this portrayal, the successes are displayed differently. The signatures answer a different question than success rates that we have seen thus far in this chapter. Rather than addressing the question of "What chance do I have on this cycle?" patients' signatures address the questions, "What

---

[57] The forum was no longer active at the time of writing early in 2019.

were the results of each cycle?" or "How many cycles until I got pregnant?" It was knowledge built in via subjective experiences and understood in retrospect.

This is often how patients I interviewed described their IVF treatments. At first, I was surprised at the amount of incredibly technical language that soon integrated within patients' ordinary vocabulary describing their experiences. As also reflected in the quote above, patients would chat away about embryo grading, blastocysts development, IVF versus ICSI, Day 3 versus Day 5 embryo transfers, hormone injection protocols, and follicle counts. This was in contrasts to physicians perceptions that patients were uninformed, at least initially. One of the first patients I met was Liezl, who at 33 had eight cycles of IVF to describe and draw from; she had the technical terminology seamlessly integrated into how she spoke about her experiences. I asked her first about her IVF history, and she quickly rattled off each cycle, marked by the number of eggs, the number of viable embryos, the number of embryos transferred or frozen, and the eventual outcomes. For instance, "June 2013, we did a sixth cycle, and again, 13 or 14 eggs were yielded. Two blastocysts were transferred, and I fell pregnant with my little boy, who is one and a half now. So, major positive," she said, smiling at her understatement.

Despite the fact that it took six cycles[58] for her "major positive," Liezl felt her experience was reflective of the stated success rate. According to Liezl, the doctor told her she would have a 40 per cent chance of success. I asked how these two things could be true at the same time: How could it be true that it took six cycles to have a child, and yet also true that she had a 40 per cent chance of success? She explained that it took at least two cycles before the doctors "got her recipe right." By this she meant that "the recipe," the exact combination of hormones to stimulate her follicle production, required tailoring and specifying to her body to produce the best yield of eggs. Thus, she felt, those

---

[58] When we met, Liezl had just had an embryo transfer for her eighth cycle. Her first "big fat positive" was her 18 month old son; the subsequent cycles were for a second child. She had a second "BFP" two weeks after we met.

two cycles didn't count. She concluded, "Every time you do a cycle, you get very excited about it, but you also look back . . . there are statistics for reasons. You're not special. The statistics are there for a reason," she said. The certainty of the statistics remained because she evaluated which of her cycles "counted" and which did not. Liezl's experience, she believed, was not special; it conformed to the numbers. Her story contorted to the fixity of scientific facts.

In an elegant article in 2013, Amade M'Charek dissects the twinned and interlocking relations of facts and fictions as they pertain to race. As she argues, STS scholars have long been interested, following the Latourian line (Latour & Woolgar, 1979), on how facts are made, stabilised, and move outside of their contexts of origin. Less has been written about fictions, what she describes as "performed realities that help us make sense of the facts; they can be narratives, theories, scenarios, aggregated data" (M'Charek, 2013:423). She concludes that (scientific) facts and fictions (the stories we tell to narrate facts), rather than exclusive domains, are deeply imbricated in one another.

> As argued above, facts and fiction are made of the same stuff. In short, a fact can be enacted as a fiction and the other way around. Their difference at a particular moment in time might be outlined as follows. A fiction is a partial truth, both "made and made up" (Clifford, 1986). The made up-ness of fiction, however, does not connote untruth or falsehood. It is fruitful to see it as a collection of devices that help to situate facts. A fact, by contrast cannot afford to be "made up." As Latour and Woolgar (1979) have shown, the factness of facts depends on their ability to disconnect themselves from the practices that helped produce them. However, facts have to be narrated, related and situated into fiction in order to make sense and to become relevant (M'Charek, 2013:436).

Both facts and fictions are necessary for each other to *work*. Parallel to this, and echoing the fact/fiction formulation (Moreira & Palladino, 2005), both the regimes of truth and hope are imbricated in the other. Here, we see how patients also retrospectively re-evaluate and re-narrate their stories (kinds of fictions that situate "facts") in relation to the stated facts of IVF success rates. Because new facts can always emerge — new tests can reveal light on previously unknown factors, new technologies can add a new tweak to treatment protocols, and because patients (women in particular) are always aging and always moving ever further down the slope of success rates — one's personal history with success and failure is never fully closed.

This is especially true for the patients with repeat failures, who start to regret not starting treatment more aggressively. For instance, I met Andrew and Manya after their first IVF. Prior to our meeting, they had gone through several years of failed attempts with IUI (or "artificial insemination"). Andrew said, "We tried a lot with the first doctor and, as I was saying to you, we were kind of wasting our time because we are going back and forth and so many inseminations, and there was so many failures there. You know we wasted our time." Their history becomes reinterpreted in light of new facts. Once they knew that IUI had lower success rates than IVF and had also experienced repeated failures with IUI, thus corresponding their "fictions" with the "facts," they felt that it was "time wasted." For others, their past success started to look "lucky" in light of enduring present failures. Dhriti, for instance, had her first son after a "few" IUIs. We spoke when he was five years old. In trying for her second child, she had undergone 17 cycles of IVF, without one success. Now at 39, she said she felt that her first son was "lucky." Similarly, Anton and Emily reflected on their first child, who they had conceived "naturally" (through sex) four years prior. After their third cycle of IVF to have a second child, Emily said, "Yeah, the more we've journeyed, the more cool we've realised, like how cool that was [to get pregnant naturally]."

In this section, I have attempted to parallel regimes of hope and truth with M'Charek's theorising of the relationship between fictions and facts. I have done this in order to think through the ways patients reconcile their personal stories (fictions) with the stated facts of IVF's success rates, and in doing so, reconstitute their own histories.

Bringing the "big guns"

Depending on the various causes attributed to their infertility, some people came to the clinic and immediately started their treatment with IVF. Melissa, who I described in the start of this section, was one such. Their first cycle was IVF with ICSI. Violet, in another case, only came to the clinic when she was 44 and trying to have a child with her new husband. An AMH[59] test revealed a very low ovarian reserve; "There's no eggs from me," she told me. On their first round, they had IVF via a known egg donor.

However, for many who came to the fertility clinics I visited, treatment starts "low," taking Clomid, for example, and timing sex for when temperature monitoring reveals one is ovulating. This is often referred to as a "home plan." If this failed, patients often move along to the next, more intricate step of intrauterine insemination, IUI or "artificial insemination," as it is also often called. The cost increases, as does the interaction with the clinic. Instead of Clomid, a tablet, the women may have to inject themselves daily prior to IUI. If several IUIs fail, physicians and patients consider the next step — IVF. This trajectory takes time, however, as one slowly engages with each form of treatment leading up to IVF. One can only make one attempt each month, so there can be several months of IUIs before reconsidering the treatment plan. And time spent trying and failing when the woman is over 35 causes considerable anxiety; in their hindsight view it becomes time "wasted." With no time to waste, IVF becomes "the big guns," to quote one patient, that is a seemingly "aggressive" treatment trajectory and interaction of disciplining, injections, timing, and medical surveillance.

Military metaphors were common among patients and medical staff in IVF, the violence of which stood out against the baby photos on the wall and paintings of maternal care. Some patients admired the clinic staff for their precision. "This place is run like a military operation," said Liezl, who expressed admiration for her doctor and the nursing sisters. I spoke with Manjun, 35, and Laila, 34,

---

[59] The anti-Müllerian hormone, produced during early stages of follicular development. Tested as an indicator of ovarian reserve.

after their embryo transfer, and both told me they felt in some way that IUI had been a waste of time for them. Laila said, she felt that they had delayed IVF with trying IUI and lifestyle changes. Manjun, her husband, said:

> I'm sort of a pragmatic person, so I've always thought even when we started this journey, I thought we should start straight with IVF. Even though I didn't know what the odds were with certainty. Like in the same way, if I fall sick, I knock it out, as opposed to sort of let it flow naturally, so that's like my approach. But I've always thought, 'OK we just need to do this so, let's do it systematically then it will work.'

IVF was then the heavy artillery brought in to fight their childlessness. Patients were faced with a problem — their infertility — and were prepared to battle against it.

Melissa and her husband Christopher had long discussions about how to approach this question. When they first started their IVF cycles, Melissa had expressed a desire to do so most "naturally:" She wanted few hormones. They began treatment in the public sector, where IVF cycles cost roughly R8,000 to R12,000 a cycle, compared to R40,000 to R65,000 a cycle in the private sector. They had read online that it took on average three cycles to fall pregnant, so therefore they decided that they should undergo their treatments in the less expensive public sector clinics. The three cycles in a public health facility, they thought, would cost the same as one cycle in a private clinic. Their doctor at the public clinic was happy to comply with Melissa's request to complete a cycle with fewer hormones. However, their first cycle failed, and they did not have any embryos frozen at the end. Melissa and I met a few weeks after their first failed cycle at my flat before we took a shopping trip — "retail therapy" we said — to the V&A Mall at the Waterfront in Cape Town. At my flat, I started the kettle as Melissa described her disappointment with the first results and her frustration that they could not start a new cycle until after the new year. "They're going to put us on different medication, a different protocol," Melissa said. "Because I think the doctor has seen now how I respond, and I could definitely get more eggs." Melissa would never get 20 eggs, and after three failed cycles in the public sector, she and her husband switched to a private clinic, another form of hopeful thinking whereby a change in clinic, protocol, or physician could make the difference. They fretted over the cost, but felt that they should have a "proper shot." When they spoke with their doctor in the private clinic about their three failed cycles, he told them that they weren't "full cycles." Because the public sector used fewer hormones, three cycles in the public sector were more like "half cycles," so in total they had completed only 1.5 cycles. After one cycle in the private clinic, she was pregnant. This story is not meant as an indictment of the public sector. What it demonstrates is how narration of what counts and what does not — from both patients and medical professions — is used to reframe personal history to stated "facts."

Kathleen Woodward (2009), a literary scholar, draws on Raymond Williams' concept of "structures of feeling" to put forth her theory of statistical panic. Woodward argues that "structures of feeling" relate to cultural emergence of affective relations. Thus, she emphasizes the "epistemological edge to emotion, that in dialectical relation to thought, can serve to disclose the structures of the world in which we are situated" (2009:13). She puts forth the idea of an emerging social formation of "statistical panic," which she describes as disclosing "the society of the statistic, one underwritten by the sense of omnipresent risk" (2009:14). Statistics, she suggests, rather than mere reflections on the past or the present, become posited as discourses of probability, figures that "engender insecurity in the form of low-grade intensities that, like low-grade fevers, permit us to go about our everyday lives but in a state of statistical stress" (Woodward, 1999). Similar to the notion of "anticipation" (Adam, Murphy, & Clarke, 2009), the politics of "statistical panic" are temporal and affective.

I would argue that instead of opposing panic, which Woodward suggests, "statistical hope" is also a kind of panic. If statistics engender a particular kind of stress, hope in IVF similarly engenders insecurity and anxiety. It foments the constant checking of success rates and statistics, the playing with narratives to ascertain one's experience as normal, and belief that after repeat failures, the success can be right around the corner. From numbers to agitated affective states, stats to hopes and dreams, Woodward's useful notion of statistical panic highlights the way that numbers and calculative regimes engender affective states oriented toward potential futures.

Furthermore, statistical panic, Woodward suggests, often subsumes or invisibilizes the financial (and emotional) investments in moving forward to prevent unwanted futures. In this way, statistical panic and consumer culture become aligned. In the case of IVF clinics, statistical hope and consumer culture are very much intertwined. Recall the physician allowing patients to proceed with a cycle with dire chances of success simply because "it's their money." Similarly, I observed during numerous weekly clinic meetings, physicians and embryologists referring to "just one last cycle" for "emotional closure," that is, going forth with patients who push for another cycle — "just one more shot to get it right" — despite repeated failures and the physicians belief that a new tactic — such as third-party IVF — would be the only path to success. Anything to improve chances becomes a selling point for IVF "add-ons," what the UK's Human Fertilisation and Embryonic Authority (HFEA) calls the array of extra treatments that clinics may use that add additional costs but have conflicting, little, or no proven value (HFEA, 2019). These include procedures that I observed on many occasions — endometrial scratching,[60] assisted hatching of embryos,[61] and IMSI or PICSI[62] — which the HFEA has variously graded as having no evidence or conflicting evidence of its effectiveness in improving IVF success rates. In this way, statistical hopes collude with consumer culture, offering patients just one more chance or just one more change in their treatment regime. These add-ons not only increase

---

[60] Purposeful injury to the endometrium in the uterus, which, as it was described to me, is thought to assist in the embryo implantation.

[61] Manipulation of the zona (the shell) of a blastocyst to facilitate hatching, the process in which the blastocyst gets rid of the zona to thus impact. I observed assisted hatching via laser and via acid treatment.

[62] IMSI, or Intracytoplasmic morphologically selected sperm injection, uses a high-powered microscope to ostensibly select the better quality sperm for use in ICSI. PICSI, or physiological ICSI technique, refers to the use of a specific petri dish for sperm samples that allows the better sperm to stick to the hyaluronic acid in the dish.

the costs for patients, but constantly tweak the procedure so that an IVF journey may never be done; there is always one more option to try.

Hopes

In committing to the IVF trajectory, and enduring cycle after cycle in pursuit of their "miracle baby," patients endure a sort of "treadmill" or what Margarete Sandelowski referred to as the "never enough" quality of IVF (Sandelowski, 1991). The very presence of IVF, whereby "miracle babies" are indeed the proof that the technology works (Franklin, 1997), compels one to try. In Franklin's study, patients' fight in IVF comes to represent more than a medical procedure but an expression of identity. In her analysis, the "desperate," "brave," and enduring infertile woman operates as a sort of trope through which IVF becomes the technological hope, the promise of a biomedical and technological solution for human suffering (1997:202-4). In that way, IVF as hope and the "desperate" infertile woman are twinned constructions that feed into one another and "powerfully unites traditional family values with faith in the power of science, technology and medicine to improve the human condition" (1997:203). Thus, what becomes symbolically and culturally important is not necessarily its statistical success, but instead the hope that IVF promises — in the case of the UK, where Franklin's research takes place, that is, the faith in scientific progress. The language of hope for the individual becomes subsumed within a larger cultural vocabulary of hope and faith in scientific progress. In contrast, for patients in other contexts such as Ecuador and Egypt, hope takes the form of religious faith and God (Inhorn, 2003; Roberts, 2012). For instance, in Egypt, Marcia Inhorn argues that IVF babies are envisaged less as proof of the efficacy of scientific progress and biomedical technology, than as gifts from God (2003:170-178). Many of the patients in her study had only one chance; financial and other barriers made their one attempt with IVF their only opportunity. This shaped their belief in the efficacy of IVF — they *had* to believe that it might just work on the first attempt. In Ecuador, despite the official Catholic prohibition on IVF, Elizabeth Roberts found a widespread acceptance and accommodation of IVF and religiosity. There, in addition to making children, IVF "reinforced relations . . . between adults and God" (2012:6). At a certain point, the certainty of scientific and biomedical interventions gave way to a belief that the result was in God's hands. In India, Bharadwaj (2016) found that IVF successes and failures were an indictment of the doctor his or herself.

The discourses around hope varied immensely within the patient group in South Africa. Some patients told me they would simply continue trying until IVF did work, putting their faith (and finances) in biomedicine. Manjun, a patient from Cape Town who was with his wife Laila, said, "I would just do it again until it's successful." Manjun reiterated how each step of the process showed an improvement, a reality that supported his belief that IVF would eventually work, that the progress would align with a teleology of eventual success in the future. This maps neatly onto ideas of scientific progress, aligning with Franklin's (1997) findings. Rose, a patient who had travelled to South Africa from Namibia, similarly told me she planned to keep trying, even if her cycle failed: "I will keep trying. I won't give up. Unless there's not money, but if there's money, I'll just keep trying." For many patients, like Rose, money was the sole inhibiting factor, and this raised their anxiety at each attempt. Some acknowledged that money was not a factor, that they could theoretically continue IVF indefinitely. I asked Amy, who had left her career in engineering to undergo IVF, the uncomfortable question: Did she know when she would stop doing IVF to have a child? With her high-paying former job, Amy had enough money to continue for the foreseeable future, a fact that she readily admitted.

> I was so confident in the process. It was the statistics and back to the statistics and early in the process I was so confident. No, I would not have been prepared to talk to anybody about that [stopping IVF] at all. Now, a couple failures and a miscarriage under your belt and a million rand later and a year later, now I am very comfortable talking about the exit strategy — that's your [TM's] phrase — but early in the process I would not have talked to you about it at all.

For Amy and others in my research, God, their faith, and their religious community played significant roles in their commitment to IVF as a treatment trajectory. Amy, a devoted Catholic, said she had to sort out her faith and ensure that she could do IVF in a way that made sense to her moral and ethical systems, taking into consideration that the Catholic Church denounces its use. In the end, and after prayer, she decided to go ahead. For Melissa, also a Christian, she felt she had to "Believe in the best and trust in God," asserting that He would not give them a desire for children without a means for having them. In the case of 14 of the 41 patients I spoke with (about a third), they mentioned God as a locus of their hope for success; faith in science could take them a substantial part of the way to fulfil their desires for children, and God would have to deliver the rest.

For the remainder, two other unique discourses circulated as narratives to explain the uncertainty of IVF successes and failures: The role of luck and the role of embryos. IVF literature is replete with discussions of gambling metaphors (Modell, 1989; Mentor, 1998). Steven Mentor's (1998) autoethnography describes this most vividly, a metaphor that overwhelms and obscures as much as it provides a language for the IVF experience:

> The last chance; the last roll of the dice; betting it all emotionally. . . . This gambling metaphor tends to obscure others: your chance at winning the lottery renders invisible the emotional costs of buying all those psychic tickets every day. The emphasis is on blind luck, on all this technology coming down to just upping your chances from none to slim on the biological craps table (Mentor, 1998:77).

He argues that the gambling metaphor, for all its seemingly superficial invocation of chance and money in a flippant game, plucks and prods at unseen depths of experiences that are instead rendered superficial by references to roulette tables and Vegas. The stakes are more than money, but identity and dreams. The patients I spoke to discussed chance often — idioms of luck, chance, "no guarantees," looking for "signs," "knock-on-wood." These were common metaphors for the uncertainty with which reproductive success and failures are distributed. For example, Claire, who had IVF in the 1980s described it thus: "But, everything was good, the eggs, the sperm, everything. But you know, if it's meant to be it will be. I really realised it's like throwing a dice. You know, whether it's going to work or not." Sarah, who was trying for a third child after having twins in her first cycle of

IVF, described how "lucky" she was. However, after several failed cycles, she worried that she was "pushing her luck:"

> Sarah: Am I pushing it as well? I've been very lucky. Maybe it's just not meant to be.
> Tessa: What do you mean pushing it?
> Sarah: Am I pushing my luck? You know, these are not working.
> Tessa: With your own health?
> Sarah: Yeah, just with having a healthy baby.

At a certain point of managing, hoping, and reviewing statistics, patients and doctors simply acknowledged that there existed a space where little could be done to improve chances. It may just be "luck" or a "roll of the dice." But contrary to the idea that "luck" is magical and irrational, other ethnographic work on luck in South Africa points to the notion that "taking a chance" is a rational engagement with investment in an increasingly precarious world (Van Wyk, 2012). Instead, engaging in gambling — either a "gamble" with IVF or the lotto, as van Wyk (2012) considers — is a controlled and calculated foray with chance. Here, we see that rather than discrete spaces between the biomedical (as rational) and the cultural (as irrational, random, lucky, or from God), these exist within the same space and time and rely on one another to work (see also Silva & Machado, 2010).

The second unique discourse used to explain the uncertainty of IVF success and failure was the role of the embryo. Take for instance, Liezl's discussion about her most recent embryo transfer: "There's nothing that they [doctors] can do to increase the chances. It's now all up to the chromosomes. And there's nothing that they can do, there's nothing that I can do, it [the embryo] is either going to take [implant] or it's not." What Liezl is referring to is that chromosomally abnormal embryos contribute to miscarriages; these embryos may not implant, or they miscarry early in a pregnancy. Since 1975, medical research has pointed to the role of embryo genetics as a factor in spontaneous miscarriage (Boue, Boue, & Lazar, 1975). In IVF, embryologists have researched methods of selecting "the best" embryo — the embryo with the greatest probability to implant and least likely to have genetic abnormalities (Braude, 2013). In this regard, pre-implantation genetic screening (PGS), a method of screening the genetic makeup of embryos to improve embryo selection, has picked up in recent years.[63] Here, I wish to emphasize the way that these scientific assertions have come to contribute to a growing narrative of what I call "agentic embryos;" the following chapter explores embryo selection practices and their contribution to agentic embryos.

I sat with an embryologist, Lucy, at a clinic while she explained PGS to a couple undergoing IVF. They had travelled to South Africa to have IVF with an egg donor. Their first egg donor cycle failed;[64] this was their second IVF attempt and with a new donor. At this clinic, it was common practice to offer PGS particularly to patients coming from abroad. The thinking was that they should screen to ensure the genetic normality of each embryo (each embryo that the couple must travel thousands of kilometres to have transferred). In sum, each embryo transfer was exponentially more expensive when factoring in the costs of plane flights and hotels; the patients should invest further to ensure that the embryo they were transferring was indeed genetically viable, so they were not "wasting" that money. With this couple, Lucy offered the argument that if they had the money to pay for PGS, they should do it, as it increased the chances for success and added reassurances that at least the embryos would be genetically normal. She described PGS as screening to see "the potential of the embryo to form a pregnancy." She explained why PGS was the preferred option instead of the embryological methods[65] of checking embryo morphology: "What we see, we know, we can't judge a book by its cover." In other words, what we do know now is that we cannot know the future; PGS can at least better "see" potentiality. Yes; but it is worth stressing that it is potentiality of a certain kind: The potential for an implant not to miscarry, or for a live child not to have chromosomal defects. Yet it is

---

[63] There have been mixed results in randomised control trials designed to demonstrate the efficacy of PGS translating into improved live birth rates (Harper et al. 2010).

[64] Again, it is worth pointing out how the language within IVF and fertility clinics blames women, in this case the donor, for the failure of eggs to fertilise or embryos to develop.

[65] She is referring to how embryology grades embryos, most commonly using the morphology of the blastocyst. The next chapter explores this.

presented as more encompassing than this. The next chapter looks closely at embryo grading and viability.

The narration of the embryo as having an active role in determining reproductive failures and successes contributes to the idea of embryos as agentive. What both of these devices — that is, the discursive use of luck and "agentic embryos" to attribute success and failure to — have in common is that they remove agency — and responsibility or culpability — from patients, doctors, and biomedicine. Reproductive failures are then not an indictment of any of these actors. Shifting agency to embryos and giving a space for chance allows for the infrastructure of IVF to remain unscathed from repeated failures. I explore this further in the next chapter through exploring embryo viability in grading processes.

Conclusion

In this chapter I have explored the complexities of the simple statistical renders of success rates in IVF, and suggest that they are anything but simple through exploring their production, interpretation, and usage across a variety of sites. I dissect the making of success rates, responding in part to Bharadwaj's (2016:247) call for contemporary critical feminist accounts of IVF success rates. In doing so, I have argued that the constant intertwined fluctuations between "facts" and "fictions" or "truth" and "hope" not only allow for IVF to "work," but also open up spaces for the workings of capital.

Ramey's point at the epigraph of this chapter reflects on the ways that states of uncertainty raise the stakes that compel people to search for signs of certainty. Several scholars have noted the relation between states of anticipation — anxiety, risk, hope, uncertainty — and the commodification of those spaces and affective states. A previous failure in IVF may raise the stakes and mean that PGS is much more enticing. Being able to try more often, at greater cost, means those with more financial means have a greater chance of eventual "success" — the "take home baby." Providing "facts" of IVF failure also shifts patient subjectivities into rational patient-consumers, who may weigh (opaque) numbers, prognoses and costs (both financial and emotional) to determine a way forward. The fixity of the statistic in medical prognosis obscures the complicated affective politics in the wake of their circulation. What one can already see is that the politics of potentiality has multiple registers: Affective and temporal (see Adams et al. 2009), but also political and economic, and, as I demonstrate in the latter half of this thesis, racialised. Potential operates not only as a way to instantiate the moral obligation to intervene (Gibbon 2013:S114), but also as a gap for profiteering on those interventions. This chapter has demonstrated how truth and hopes, facts and fictions, calculations and affect, operate in intertwined and imbricated ways to make IVF — as a medical treatment, a tool to address social suffering, and an industry — work.

Chapter Four:

“We just need one:” Navigating the small data journey

Abigail had never been to South Africa when she arrived in early April 2016. A friend of hers in London was originally from South Africa and had travelled home for an IVF cycle at a local clinic. Abigail thought she should take the opportunity to do her cycle — her second — at the same time. In her mind, there were advantages to this plan: Having a friend going through the same ups and downs, having a free place to stay during the three weeks it would take to complete a cycle abroad, and, of course, the reduced cost of doing IVF in South Africa compared to London. Abigail was a freelancer in her field, so the time away from her work in the UK was not a huge problem to navigate.

Abigail had been pregnant once before, “naturally” as she said and “without even trying.” However, an amniocentesis diagnosed her early foetus as having Downs syndrome. The decision, she said later, wrenched her, but she and her partner decided to terminate the pregnancy. They “tried” again for a year, but with no result. Her first attempt with IVF was in London. It did not work. At 43 years old, this would be her second cycle. She agreed to have me “tag along,” as I put it, through her treatment in South Africa. I joined her when she met with the various embryologists to hear them explain the procedure, with a psychologist who welcomed Abigail and her partner to the clinic, and with the physician for scans and updates on her growing follicles. I met her partner, Oliver, who flew in about a week into her treatment. I observed her egg aspiration, and, when she came out of sedation, heard her sing to the anaesthetist in her quasi-conscious state. I said my goodbyes when I felt my presence might be burdensome, at the moment when Abigail suddenly felt regret and sadness that they had decided to implant the "second-best embryo." Given the choice among three embryos — the best, the second-best, and a "not-great" embryo, and amid numerous complications, weighing of values and potential impacts, and factoring in flights, travel, and timing — they had chosen the "second-best" embryo to transfer. It was a complicated and confusing decision and one that I discuss in detail at the end of this chapter. Immediately afterwards, I found her curled up in the clinic bed, talking quietly with her partner and clearly upset that they had tried with the "second-best" rather than "the best" embryo.

What constitutes a "second-best embryo?" How is that determination produced? And what does it mean, in regards to the social production of assessments? Finding *the best* embryo to transfer constitutes a large swath of scientific literature in human embryology in relation to IVF (see for instance Dokras, Sargent, & Barlow, 1993; Windt, 2004; Kotze et al., 2010; Racowsky et al., 2010; Nel-Themaat & Nagy, 2011; Braude, 2013; Iraurgui et al. 2016; Yang et al. 2018). It is a crucial concern of the field to try multiple tools, technologies, and systems of evaluation in order to find the *best*, which refers to the embryo that has the highest chance of becoming a viable pregnancy and continuing on to become a healthy live baby.[66] There are many numbers that emerge throughout the IVF treatment processes, both before and after, but the one that was most commonly reiterated throughout was the "one" that featured in that "You just need one" formulation. *One* referred to one embryo with the potential to be the singular, sought-after, viable, and healthy child. *Just* one; the simplicity of that

---

[66] For an example in the early scientific literature, see Cummins et al., 1986:284).

phrasing belies so many questions. Essentially, *how* to choose the one? Which of these embryos is *the one*? How does one *know* it is the one?

These questions reflect the epistemological, the political-economic, and the social values embedded within routine clinical and laboratory practices. Sharon Kaufman (2005) writes that the ends of life in a hospital cannot be detangled from the routines, systems, and institutions where they take place. Here, I borrow from her in thinking through the ways that embryo trajectories are embedded within routine scientific practices and quotidian patient deliberations—time away from work, travel to the clinic, plans in the future, and timing potential pregnancies. In this chapter, I trace the journey to producing "the one" through what I call "small data," the numbers produced through socio-technical processes that mark various understandings of "success" and "failure" through IVF. The small data journey reveals an embryo economy, in the sense that it involves the distribution of resources in a context of scarcity. It thus implicates a thrift, a frugality, in relation to the nascent potentiality of biological material and that shapes patient and doctor relations to that material. Through this I describe the various technologies, processes, and social worlds produced through which the embryo's potentiality materializes. This produces what Finnish anthropologist Elina Helosvuori (2018) describes as the assemblage of "embryo viability," an achievement made through scientific processes but also patient participation, and I argue, the participation of "agentic embryos." While some embryos become "viable," others become "waste" or are frozen "for the future." A careful ethnographic accounting towards these various trajectories reveals the way that the proliferation of numbers within IVF conceals other forms of valuation that are taking place.

12-15 eggs

I start this journey at the first clinical stage in many IVF cycles — hormonal stimulation and oocyte retrieval. The object was to acquire "good" eggs, but more so, a good number of eggs. Oocytes are easy to quantify *in vivo,* but are difficult to qualify, in contrast with embryos and sperm. While physicians often told patients "you just need one," obtaining one good embryo meant beginning the journey with a "hearty" stock of oocytes. This was stated variously by different physicians I met, but the range mentioned on more than one occasion was 12-15 oocytes. That is, the "ideal" oocyte yield to eventually produce a single live baby was this number of oocytes from a given hormonal stimulation cycle. Too few eggs resulted in reduced chances for a live birth, and too many eggs increased the possibility of ovarian hyperstimulation syndrome (OHSS), according to a range of scientific studies.[67]

The number of eggs extracted becomes the ceiling for the number of potential embryos. Labs can find millions of sperm[68], but with only 15 eggs, they can achieve a maximum of 15 embryos. During the days leading up to egg aspiration, doctors monitor patient progress through sonar screens every few days, calibrating hormone medications as necessary to produce many eggs, while at the same time avoiding the risk of OHSS. OHSS occurs in an estimated one to five per cent of IVF cycles (Delvigne & Rozenberg, 2002), and constitutes the most commonly identified risk of undergoing hormonal stimulation for IVF or egg donation. Symptoms of OHSS include "vascular permeability resulting in extravasation of intravascular fluid into the third space" (Steward et al. 2014), or what has been described colloquially to me as an extraction of fluids from the blood into the abdominal cavity. The abdomen swells, the ovaries are swollen, hard, and sore. Severe OHSS requires hospitalization, and at worst it can result in a loss of ovaries and death. Patients may not even report cases of mild

---

[67] Van der Gaast et al., (2006) found that the optimal number was 13. In Steward et al.'s (2014) study, the highest live birth rate was among the cohort that yielded 11-15 eggs; thereafter, the rate of OHSS increased. Sunkara et al., (2011) found that live birth rate increased up to 15 oocytes retrieved, plateaued between 15-20 eggs, and decreased after 20. Finally, Ji et al., (2013) concluded that the optimal range was between 6 and 15 oocytes, balancing live birth rate potential with risk of OHSS.

[68] Or struggle to find one at times, which is why the use of ICSI and donors; but my point is that the number of oocytes structures and limits the nujber of potential embryos.

OHSS, attributing it to the pain and discomfort of the IVF process, which means that OHSS is likely underreported (Steward et al., 2014). Trying to make many eggs, to push that ceiling higher, while avoiding OHSS, becomes a persistent negotiation for fertility specialists (Steward et al., 2014).[69]

Much of the literature on reproductive biomedicine and embryology bears out this negotiation. Research has often reiterated the "ideal number" of oocytes extracted as between 10-15 (Steward et al., 2014; Van der Gaast et al., 2006; Ji et al., 2013; Sunkara et al., 2011)). Less than 10, and live birth rates decrease because there are fewer viable embryos. The idea is that if, for example, one in five embryos could produce a viable child, then having 10 embryos delivers a better chance than five. However, greater than 15 eggs, and live birth rates often plateau, and in some studies rates decrease (Sunkara et al. 2011). This is attributed to the theory that patients with a large number of eggs (more than 18) may have minor versions of OHSS, which may decrease uterine receptivity of embryos in a fresh embryo transfer, or that with such a great number of eggs, egg quality decreases (Ji et al. 2013:2732). Eggs cannot be graded in the same way as embryos for a marker of their potential reproductive capacity. Eggs were instead marked by their maturity — mature and "good" as Metaphase II (MII), and immature as Metaphase 1 or GV.[70] Sometimes embryologists would comment on the texture or pressure of the eggs with references to eggs' "stickiness" or "softness" (like a slightly deflated ball) if the eggs seemed less than ideal when they injected them with sperm in the ICSI procedure. The only way to see if they were viable was to fertilise them.

In cases I observed with women often referred to as "low" or "poor responders" (patients who for a multitude of reasons do not yield high oocyte numbers), many doctors had to navigate patient desire for high yields. Melissa was one such patient who tried to push for "more hormones,"

---

[69] Lochlann Jain (2013:128-150) argues that the lack of long-term data on the impact of hormonal stimulation in IVF, particularly for donors, may conceal the links between stimulation and certain forms of cancer.

[70] For the intracytoplasmic nucleus called the "germinal vesicle;" immature if the GV is present (Rienzi & Ubaldi, 2018).

or ingesting higher dosages of stimulating hormones, which to her would mean being able to produce more eggs. After her first failed cycle, we discussed her plans for a second. She had initially wanted something more "natural", meaning fewer hormones. "And before I was like, 'Oh no, I don't want too much hormones because I don't want it to be invasive in my body,' and now I'm like, 'Pump me with hormones! I want 20 eggs.'" So, when physicians found that a patient might yield only four eggs during a given cycle, doctors responded with various logics. Some physicians used "egg batching" or "egg pooling," particularly with older patients who would often yield no more than half a dozen oocytes in a given hormone stimulation. "Egg batching/pooling" involved going through several rounds of hormone stimulation and egg aspiration, then freezing and cryopreserving the viable eggs until they had a "batch" of around 12 to 15 to fertilize and develop into embryos. Such practices are not commonly described in the academic literature but show up in online forums and discussion groups for IVF patients around the world. One reference to it describes "egg pooling" as a technique for "poor responders" but the study ultimately concluded that it did not increase live birth rates (Celik, et al., 2018). One physician I worked with said this was a cost-saving measure, ensuring that the patients only paid for the fertilization and embryo transfer processes when there were enough viable eggs to justify it.

Amy was 39 when we spoke and had spent more than a year in what she felt were seemingly endless cycles. Unlike the quintessential cycle pattern — hormonal inducement of ovaries, egg retrieval, fertilization and growth of embryos in the lab, and embryo transfer, all within a matter of weeks, or what is also referred to as a "fresh cycle" — Amy's physician had instead suggested that they retrieve eggs and "batch" them. Not only frozen eggs; this process meant that if, in a particular cycle, Amy yielded many eggs, they would create embryos and freeze them all.[71] In a single hormonal

---

[71] This is a fully "above board" process, and I am not intending to insinuate anything nefarious, but rather to suggest that in a context of "egg scarcity," the "typical" treatment trajectory shifted.

stimulation, Amy had retrieved at most four eggs. With a fertilization rate of 67 per cent,[72] and further attrition of embryos, Amy would likely have, maybe, one embryo. For instance, if 75 per cent of eggs retrieved are "good" (meaning they fertilise), then a batch of 12 eggs yields four "good" blastocysts after five days of development, whereas a batch of four eggs would yield one blastocyst. With "batching," she mimicked a "normal" cycle with higher numbers, more eggs, and thus would end up with maybe two embryos to transfer or even (crossing her fingers, she said) some to freeze. What this did was provide Amy with, for instance, six embryos at the end of six months with which to choose *the best* embryo; rather than using the sole embryo left at the end of every month. Egg or embryo pooling or batching thus facilitated the work of embryo selection, allowing embryologists to choose the best, rather than merely going with what was available. It also seemed a measure to mollify patients' anxieties, to build up to more "chances" before the next steps of IVF. It provided a measurable and calculable goal for Amy to achieve. Rather than get to 12 eggs in a single IVF cycle as, perhaps, a younger patient would, Amy was content with the explanation that she would instead have to accumulate or "batch" her way to 12 eggs.

Other physicians in South Africa had discussions with patients that played into economic ideas of value in scarcity. Essentially, these were about the possibility that they may only extract four to six eggs at a given aspiration, but that these would be "good quality" eggs; this was in contrast to "pumping one full of hormones" and achieving "loads of eggs but of poor quality." Yet some patients purposefully wished to be "pumped full of hormones" to garner a high yield. One patient consulting with one of the physicians mentioned the experience of a friend who had a low AMH level[73] and with "a lot" of hormones yielded 14 eggs and a successful pregnancy. After questioning her about the

---

[72] This was not the fertilization rate of the clinic, but a hypothetical figure. Laboratory KPIs include fertilization rates, with competence ranges of an average 70 per cent for ICSI procedures and 67 percent for IVF (ESHRE, 2017).

[73] One of the initial tests for female IVF patients is to assess the anti-Müllerian hormone levels. This level is said to be an indicator of ovarian reserve, or the number of oocytes remaining. Low ovarian reserve may cause sub fertility but also, for those in IVF treatment, may result in low oocyte yields.

friend's age and whether she could have used a donor, he concluded, "You have a low reserve. We're simply not going to ever get 10, 14 eggs from you. It's important instead to get good quality egg. Let's make this one the right one."

Relations of scarce oocytes

That oocytes operate in a constrained, scarce economy of the body has been noted by scholars such as Catherine Waldby, a feminist medical sociologist. She writes about how IVF itself has established oocytes as scarce:

> The techniques of IVF create the preconditions for the commodification of oocytes in two senses. First, they make oocytes into potentially transactional objects. Without IVF, oocytes remain singular and in vivo, inaccessible to social circulation. With IVF, they can be produced in multiples, manipulated in the clinic and the laboratory (in vitro) and transferred between a donor and a recipient. Second, they create oocyte deficits. While treatment is centred on the hormonal production of multiple oocytes, the creation of abundance, the outcome is often an insufficient number to produce a pregnancy (Waldby, 2015: 277).

Unlike most human tissue — embryos, blood, organs — oocytes occupy a unique space as one of the most openly commodified. In studying oocyte donation for research, Waldby and Caroll (2011) argue that the reasons why patients did not want to donate oocytes was their scarcity together with the extensive labour required to (over)produce oocytes and the lack of assessment standards to definitively grade their reproductive potential. Unlike other commodities, the relevant quality of an oocyte is difficult to quantify. The only way to know if it is a good egg is if it produces a baby.[74]

The value of a single oocyte changed as the number of oocytes deviated from the 12-15 range. When labs were operating with extreme scarcity, extra labour would be deployed or working hours extended to ensure that every last oocyte available was retrieved. This is not to expose deviations from

---

[74] This no doubt contributes to why certain donor eggs in the United States are increasingly valued for the biography of the donor rather than for the intrinsic quality of the eggs. The exception to this is if a donor is marked as having donated before and the assurance that the previous donation produced a child. For more on eggs as commodities, see Ikemoto, 2009a; Deomampo, 2019.

protocol, but to demonstrate that when embryologists knew that an older patient would retrieve only one or two oocytes, they took the extra step to check — just in case. For instance, sometimes physicians would request that embryologists carry out a second check of the tubes for follicular fluid just in case an oocyte was missed. Sometimes, physicians would request "rescue ICSIs" — a second attempt at ICSI done several hours, if not a day, after if the first failed to fertilize.[75] On another occasion, I saw a physician digging in the trash in the embryology lab to try to recover a sperm sample from the day before in an attempt to perform a rescue ICSI. In that case, the embryologist rolled his eyes at me when I asked what the physician was doing. She was not hopeful that the rescue ICSI would work, and she was frustrated with the physician's insistence. However, these practices changed as the number of oocytes increased for a given patient. That is, when operating within contexts of surplus — when patients had more than 15 oocytes, or as many as 20, 30 or, in one instance that I saw, a patient had 48 oocytes retrieved — practices shifted too. Sometimes this was in response to the limited time. More oocytes retrieved from a given patient meant that embryologists had less time to dedicate to extracting each egg and thus could not afford time for a second check of tubes of follicular fluid. With as many as six oocyte retrievals in a morning, if a patient yielded 20 eggs, there was no time for a second check of each tube of follicular fluid.

Most often, practices in relation to eggs relate to them through contexts of scarcity. Rarely, however, the reverse was true. As Waldby describes (2015), most often women cannot produce enough eggs for a viable pregnancy in a single round of IVF, so scarcity is the norm. More infrequent cases of numerous eggs -— more than 20 for instance — meant that patients had "excess" or "spare" eggs. The marking and establishment of 15 eggs as ideal thus produces "excess" eggs (i.e. those eggs over

---

[75] The literature describes "rescue ICSI" as a last minute response to near or total fertilization failures in "traditional" IVF (Yuzpe, Lui, & Fluker, 2000; Kuczynski et al., 2002). The results are mixed: One study reported good results if the fertilization failures are noted early enough and the rescue ICSI applied (Yuzpe, Lui, & Fluker, 2000); another found that rescue ICSI produced poor embryos that did not often result in pregnancy or live birth (Kuczynski et al., 2002).

15). Parallel to how the statistical establishment of a "norm" produces a "deviation" (Lock & Nguyen, 2018:29-49), the economy of scarcity and the establishment of a frugal "ideal" for the outcome of a live birth produces "excess." Some clinics made it a practice to freeze any eggs beyond 15 as a result. In some cases, "excess" eggs, particularly if they came from donors, were saved and set aside for potential "egg sharing" with other patients. Most patients refused egg sharing, which resulted in some staff bad-mouthing them as being "selfish." In another case, a patient who yielded 48 oocytes in a single retrieval became the topic of gossip around the lab. Embryologists thought she was being excessive and risky in insisting on such high hormonal stimulation and yielding so many eggs. One of the staff members asked me to speak to her for my research (which I never got the chance to do). The embryologist told me, "She's had two or three children with us already. But she keeps doing fresh cycles, transferring some and freezing the rest. She must have 20 embryos in storage. She's starting her own little orphanage." The patient's insistence on producing a high yield of eggs and thus embryos was seen as wasteful and excessive. What could, in another context, be read as accumulation and saving of eggs, in a context of scarcity, the patient's actions were read as hoarding.

Even with numerous eggs, there remains a sense of the individualised potential of each oocyte. Once, after a string of fractured zonas[76] in several aspirations, the lab head questioned to her staff, whose response was that they had checked the pump and it was fine; they could not pinpoint the cause. However, the lab head continued to tease her staff members, "Excuses, excuses . . ." They responded, "Well, at least she's got 10 others. She had 11 eggs, and only one fractured." The lab head retorted in a teasing way, "But she could have had 11, shame. That could have been the one. That could have been the baby."

---

[76] Zonas are the "shell" around the oocyte. The zonas are fractured in about five per cent of cases, and the cause of this is often thought to be the pressure system in the aspiration pump that retrieves the follicular fluid (Lowe et al., 1988).

Care and potential

Very early in my fieldwork, I was scribbling thoughts in my notebook in the back of one of the labs. A series of aspirations had flooded through, one after the other, and the embryologists were busy shuffling test tubes through, searching for eggs, collecting them and marking sheets. As the process unfolded, embryologists would shout out the number of eggs retrieved to the physician doing the extraction. The number of eggs was everyone's primary interest, and some clinics had special forms dedicated to informing patients as soon as they woke up how many eggs were extracted. I took note of the process, trying to stay out of the way as far as possible, when the physician came into the lab and noticed me scribbling away. Many of the physicians and embryologists were not accustomed to having an anthropologist/observer around and wondered aloud about the notes I was taking. The physician asked me directly, "What things are you writing down?" I had been thinking about the care with which the work was conducted. At first somewhat violently, with the piercing of ovarian follicles and knocking of test tubes against petri dishes to ensure that all the fluid, blood, tissue, and, hopefully, the sought-after oocyte, made it into the petri dish. After that, the work was more precise. Tiny drops of oil and medium are poured out to place each oocyte, and then embryologists take careful, considered steps to place the petri dishes gingerly into specially marked incubators. Having just begun my fieldwork, I was not yet used to explaining myself, explaining my work, jargon-free. I think I responded something along the lines of, how it seemed that the further along the process the oocytes came, and further from the body, the increased care and value they embodied. The physician was unimpressed. He had been hesitant to allow me access to the clinic, and this remark seemed to reaffirm his concern — that I had no idea what they were doing. "I think it's good that we reflect on what we're doing, but your observation is wrong," he said. The doctor continued:

> No, there's not more and more care. We follow protocol. There's always care. You can't leave an embryo out; it will fail. You have to take care at every single step. We are nurturing life here. We are simulating what happens inside the body. These are the laws of nature, you can't be

> more and more careful, you must be careful at all times. Each embryo has inherent potential, an inherent propensity, and you have to careful at all times.

Here, care for the patient and care for the tissues (eggs and embryo) are imbricated. Further, care is following protocol. This differs from Dixon's (2015) findings (in a markedly different setting), where he argues that biomedical protocol works because of "extra-protocol" care practices. Here, the physician frames his care as following protocol exactly and attending to each and every embryo as if it is "the one." Practices in the clinic reiterate what the physician here was trying to explain — each and every embryo is understood in its singular potentiality to become "the one." The one to continue to blastocyst stage, the one to become transferred, the one to implant and result in a positive pregnancy test, the one to make it past the 12-week mark, the one to become the sought after "take-home" baby. It is reiterated in the marking of embryo sheets. Each egg becomes individualised and recorded. Each embryo has a history, but not every embryo has a future, regardless of the amount of care. Eggs to fertilization, embryo development through the next days, marking the number of cells, the grade of each embryo, and the eventual fate: Transfer, freezing, or waste.

Liezl, a patient who had undergone eight IVF cycles, tried not to think of all those embryos that did not have a future. "The amount of potential children, 40 already, that have just died. But you can't think of them as kids. 'Cos that little thing to turn into a baby. . . . There's such a lot of stats it [the embryo] needs to overcome to be one," she said. Liezl moved in and out of ascribing embryos in the context of life politics. They were potential children, but they were not, yet; because they still had to "overcome" the stats. The stats and obstacles to overcome included the failure to implant, the potential of genetic abnormality, the risk of miscarriage, the risk of multiples.

Was it the embryo that overcame stats? Or was it the doctors, the labs, the scientific practice? Potentiality, as it is commonly considered in biomedicine, is framed as something inherent (as the doctor put it), but only comes to actuality via the intervention (or the "helping hand," to use the expression of Sarah Franklin's (1997)) of science. Yet Liezl described the embryos as having agency, the ones overcoming the chances, their inherent propensity unfolding into actuality as they made their way across the marked sheets of embryo history records. What did these embryos have to "overcome?"

Attrition

Could that one egg have been the baby? According to what I call attrition, and other scholars have described as "the deficit spiral" (Waldby & Carroll, 2011), it is not likely that any given egg could be "the one." Attrition describes the section of the small data journey from eggs to embryos and how Darwinian logics of "nature" and "natural selection" become enrolled in embryo viability.

Amy, the patient mentioned in a previous section, was 39. She was a favourite at the clinic, appreciated by the staff for her good humour and friendliness. They fretted about her, as she had recently had a miscarriage in her ninth week of pregnancy. One of the elements of IVF that surprised her, she said, was what she described as the "siphoning" or "whittling down" of one's numbers in the "small data journey:"

> **Amy**: The first couple of cycles you are so excited because you walk in . . . Like with this cycle, "There are seven follicles. Woohoo!" Well, now we're looking at two and that's before they even leave my body. And then the next step is for fertilisation. Well, I've been really successful with fertilisation. That is until last round, and I had four [eggs] and only one for the end [only one became an embryo after fertilisation]. Well, there you go! I've never had that happen before and my success rate on fertilisation had been very high and then boom! So every step of the process you get whittled down. That's a good Southern[77] [American] word for you — "whittled." But every step of the process you go down and that is part of it that I didn't realise before. Now I'm aware of it, but I didn't realise that. So that's definitely part of the chances; the first thing is that everything . . .
> **Tessa**: Yeah, you really want to start out with like a lot because you know it's just going to go down and down and down . . .
> **Amy**: And down and down and down . . .

---

[77] Amy and I discovered quickly in our interactions that we had both grown up in the Southern United States, and thus we often referred to places we both knew (Houston, Texas, for example), and to local vernaculars and slang. Amy had lived now for several years in the Western Cape with her husband, whom she described as Afrikaans and coming from Johannesburg's East Rand.

Not all oocytes fertilize. Aggregated fertilization rates range, from 50 per cent to roughly 80 per cent, depending on protocol and the clinic. The rate is among laboratory KPIs that clinics monitor to ensure that they are achieving certain standards (ESHRE Special Interest Group of Embryology and Alpha Scientists in Reproductive Medicine, 2017). At this point, the process differs depending on whether patients move forward with "traditional" IVF or with ICSI. While "traditional" IVF places prepared sperm in a test tube with a mature oocyte and allows the sperm to fertilize "naturally," meaning, in this case, without forceful injection; in the ICSI process an embryologist manually selects an individual sperm and injects it into the oocyte with a pipette. Developed in the early 1990s, ICSI was meant to address male-factor infertility; sperm with low-motility or a low sperm count were not issues, as the embryologists injected the sperm. At the time, several scholars worried about the unknown long-term effects of ICSI, such as potentially perpetuating the genetic factors for male infertility (Patrizio, 1995). Despite the added costs, in many clinics worldwide it has become the preferred method of fertilisation, beyond patients with male-factor infertility (Jones, Horne, & Fitzgerald, 2012). In South Africa, it has become the primary method of IVF, with 2,416 fresh embryo transfer cycles with ICSI versus 983 fresh embryo transfers with IVF in 2014 (SASREG, 2017). Even today, several embryologists during my fieldwork mentioned some concern with the high levels of ICSI and whether it was necessary or overused. One clinic had a sperm testing method to evaluate whether to use IVF or ICSI to make it a diagnostic evaluation (via testing) rather than a clinical one (the physician or embryologist's decision). Others were more liberal in their usage, using ICSI as the "go-to" procedure to eliminate the "chanciness" of IVF,[78] despite scholars reporting no correlation

---

[78] A survey in the UK found that clinics varied widely in their usage of ICSI, with some clinics using it 21 per cent of the time and others 80 per cent (Jones, Horne, & Fitzgerald, 2012). The variance depended on the criteria the clinic used for determining ICSI versus IVF. All used sperm count; some included sperm motility, morphology, and antibody tests. Some used ICSI by patient request, and all used it if conventional IVF had failed in a previous cycle. Thus, a variable combination of semen parameters (testing), patient desires, and previous clinical records factored into IVF versus ICSI usage.

between ICSI and improved pregnancy rates (Jones, Horne, & Fitzgerald, 2012). Sometimes patients requested IVF in particular, or asked for half their oocytes to be fertilized with IVF and half with ICSI; embryologists' understandings of this request (as they told me) was that patients preferred the "more natural" method of IVF when possible. "Not that any of this is natural," quipped Debra, an embryologist, after explaining why some patients preferred IVF.

The clinics I worked with differed on their timing for embryo transfers and what day to do them, either Day 3 or Day 5 of embryo development (occasionally some did Day 6 if embryos were slow to develop). As mentioned in the previous chapter, once oocytes move *in vitro* and become fertilized, the counting of "days" begins anew. What was a Day 14 aspiration day, for instance, for a woman in IVF, becomes Day 0 for fertilised eggs. In regards to when to transfer embryos, some embryologists I worked with offered the argument favouring Day 3. For one, older patients often had fewer eggs to start with and higher rates of aneuploidy embryos, that is, embryos with genetic abnormalities. Say, for example, an older female patient had six eggs extracted. With a fertilization rate of between 50 and 70 per cent of the mature eggs, and subsequent attrition of the embryos, by Day 3 only two embryos remained viable. Often, they would transfer both on Day 3. "Your womb is a better environment for the embryos than our petri dishes, no matter what we do," said one embryologist. However, if Day 3 came with many "good-looking" embryos, often the lab would suggest waiting to Day 5 to allow for the "natural" dispersion between good and bad embryos to emerge more fully. The "logic of attrition," as I call it, meant that fewer embryos would make it to the Day 5 blastocyst stage, but those embryos that did would be stronger, the better ones, the ones more likely to result in a pregnancy, and thus a child. The logic at play here portends that the fates of embryos are primarily already determined, usually explained by genetic factors. Allowing only "the strong to survive," extends Darwinian logic to life politics and embryo economies.

In one case, a 44 year old patient, using an egg donated from a 42 year old, had been scheduled for a Day 3 transfer. The embryologist, Debra, told me the reason for this initial scheduling was that no one expected many "good-looking" embryos to emerge from a donor of that age. However, the team was surprised on Day 3 to find seven viable embryos, so the nursing sisters called the patient to reschedule to a Day 5 transfer. This was a rare case when a patient resisted. The patient was adamant to transfer four embryos and freeze three. The nursing sister came into the lab to have Debra speak to the patient on the phone and explain the situation. "We don't want to randomly select four embryos. We want to transfer the best," Debra said to the patient. "Over the next two days, they [the embryos] will show us which one is the best. We don't want to take the risk of randomly selecting four. They will show themselves to us." The logic here was that with seven good embryos, they could not yet tell which were "the strong."

If doctors and the lab opted for a Day 3 transfer, and embryos remained left behind, they would wait until at least Day 5 to ensure that the remaining embryos for freezing were viable and hardy. Other clinics performed transfers on Day 5 only. The logic contended that there was no use saving (or transferring) something if it ultimately could not offer the chance for a viable pregnancy. Freezing both took time and cost the patient money, not only for the freezing procedure but also for materials and the accumulated storage costs of cryopreservation. This line of thinking argued that it was better to rather allow the viability of the embryo to make itself known. Rather than have the embryologists attempt to select the best embryo, it was better to have "nature" reveal its own selection.

I describe this assemblage — from Darwinian understandings of life politics, economic frugality, and attachment to "naturalness" — as the logic of attrition. What is attrition? This is not to say "death," which would assume that embryos have "life." Such an assertion echoes the debates in other countries, particularly the US, where life debates and questions of when life begins overdetermine discussions about embryos and death (Ginsberg & Rapp, 1995; Morgan, 2009; Roberts, 2011). The issue is not whether an embryo in question has "life" now, but will it become life; in other words, at issue is the potentiality for an embryo to become the "take-home baby"[79] that is the ultimate barometer of success in IVF. Under the logic of attrition, embryo's innate potentiality becomes expressed in their genetics, thus allow for embryo's agency and participation in assembling viability. Attrition is also an interesting word in that it invokes forms of warfare, where forces are worn down through consistent, unceasing pressure (see the discussion on military metaphors in the previous chapter). Attrition here denotes the eventual reduction in numbers, from oocytes extracted to blastocysts, of one's "chances." Most embryologists say that embryos merely "stop developing" at a certain point, and those points can becomes lessons in themselves, indicating, perhaps, where the larger cause of infertility lies. Embryos tell tales, even if they fail.

Embryo assessment systems

While the eventual fates of embryos cannot always be seen, embryo grading and selection comprises a large swath of the scientific literature on embryos and IVF. Some of the growth in this area of IVF research has resulted from the emphasis on having singleton pregnancies and not twins, triplets, or greater. Multiples are risky, for both mother and potential baby, and can cause negative obstetric outcomes and prematurity (Bergh, 2005). The earlier generation's practice of transferring multiple embryos, and thus putting patients at increased risk for multiple gestations, came under scrutiny in the early 2000s (ESHRE Task Force on Ethics and Law, 2003; Bergh, 2005). A growing number of countries and IVF governing agencies have regulated the number of embryos that can be transferred in a single attempt (c.f. Saldeen & Sundström, 2005). In the case of South Africa, the number of embryos transferred at a given time is limited to two, unless there is a medical reason for otherwise

---

[79] Again, what kind of "take-home baby?" This question will continue through this dissertation.

(National Health Act No. 65 of 2003, Regulations, 2012). With the push to limit the number of embryos to one or two came a greater need for evidence-based criteria for making that selection. The growing popularity of single embryo transfers has created the need for improved techniques to select *the best* single embryo (Van Royen et al., 1999; Gardner & Schoolcraft, 1999).

While there are multiple methods for evaluating embryos,[80] in the clinics I observed embryologists graded embryos using morphological assessments. Embryo grading refers to the process through which embryologists evaluated embryos daily and provided a corresponding "grade" for how well the development was proceeding. Sometimes, this was combined with pre-implantation genetic screening (PGS) and to a much lesser extent, pre-implantation genetic diagnosis (PGD). Morphology grading is an assessment of embryo appearance in reference to certain criteria.

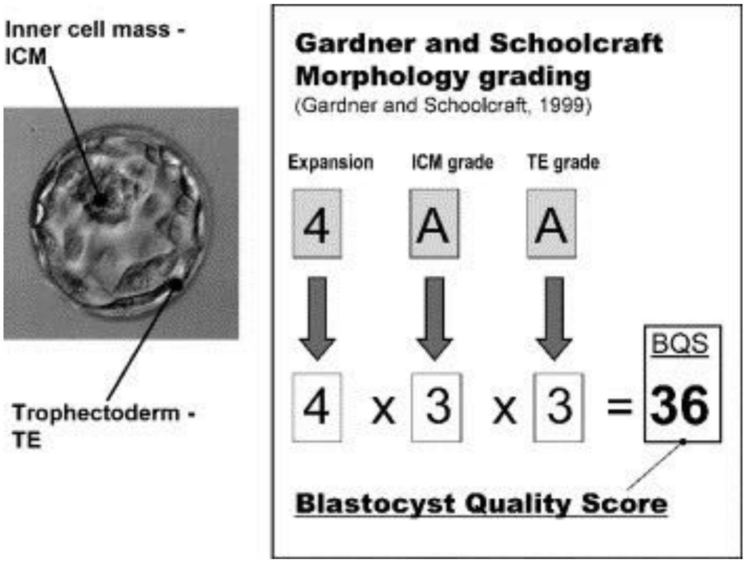


Figure 11. A visual diagram of the elements that comprise morphology grading under the Gardner and Schoolcraft (1999) system. The elements include inner cell mass, trophectoderm, and the degree of expansion and hatching status (from Rehman et al., 2007). This system was used in the labs I observed.

---

[80] Here is a brief review of alternative methods of evaluating embryos: Studies have shown the correlation between implantation rates and the timing of cell cleavage (cell divisions) (Bos-Mikich, Mattos, & Ferrari, 2001). The advent of time-lapse photography of embryos in incubation has allowed for researchers to include several more time-markers, such as appearance and disappearance of pro-nuclei, that correlate to good IVF outcomes; this is referred to as "morphokinetic analysis" (Yang, et al., 2018). Other methods include testing the culture medium as a way to test for normal metabolic function of the embryos (Scott, et al., 2008; Nel-Themaat & Nagy, 2011).

On a daily basis — and generally, I observed, first thing in the morning — lab staff removed the embryos from the incubator, and a team of two would check them and mark the morphology grade on the monitoring sheet. The intention was to individuate and thus monitor and grade each embryo *in vitro*. Here are my fieldnotes from observing embryo grading in one clinic:

> Miriam, Katherine and Debra were the embryology team grading one day when I arrived. Miriam removed a petri dish from the incubator, and Debra sat at the microscope. Katherine was ready with a pencil and the relevant patient files, ready and opened to the embryo monitoring sheet. Miriam brought over the first patient's petri dish. "Van Wyk," she said, calling out the name of the patient to verify with Katherine that petri dish and embryos matched the "paper trail" (Cussins, 1996) between patient, eventual uterus, material *in vitro*, and the forms where patient records are kept. Miriam moved quickly between the incubators and the microscope, but with practiced care, staring at the petri dish in her hand and stepping with purpose. She placed the petri dish on the microscope plate and the material appeared on the televised screen of the microscope.[81] The microscope's plate was heated to reduce heat loss from the embryos being out of the incubator. The lab was also warm, decidedly warmer than in the nearby doctors' offices and surgical theatre. A loud humming constantly enveloped our conversations, a by-product of the air pressure systems in the lab. The embryos were arranged in the petri dish in a clockwise order; Embryo 1 on the paperwork was at the 12 o'clock position. Miriam looked at the first embryo and called out the grade, which Katherine would write in the file. A slight twist of the wrist, and Debra rotated the dish to see Embryo 2. Debra again called out the morphology grade for Embryo 2: 4BB. Katherine marked it down, and they continued until all the embryos were graded. Miriam already had the next patient's petri dish ready, removing the Van Wyk dish and returning it to the incubator space marked "Van Wyk." Grading eight embryos took less than two minutes in this carefully coordinated process.

While the elements that comprise the grade for embryo are generally uniform across the clinics I worked with, how that grade was translated or expressed to patients differed. Some clinics provided the embryo grades as they recorded them according to the Gardner and Schoolcraft (1999) system (see Figure 11 above). In that system, embryologists ranked blastocysts[82] on a scale of 1 through 5 (5 being best) for cell division, and offered the grades for the traphectoderm and inner cell mass as A, B

---

[81] Commonly, a microscope was attached to a screen so that more than one person could assess the material (embryo or sperm, for example). Sometimes a crowd would form — doctors, embryologists, nursing sisters, a visiting anthropologist — to see the procedure or embryo.

[82] Blastocyst denotes a stage of embryo development, generally around Day 5 *in vitro*. Not all embryos reach the blastocyst stage, but the grading described here refers to blastocyst grades. Prior to the blastocyst stage, the labs that I observed generally marked the number of cells. Thus, whether the embryo had reached 8-cell stage by Day 3 was the question.

or C. Thus, an embryo grade could be expressed, as it is in most scientific journals, as a 4BB or 3AA, for example. Some clinics found this too technical or confusing for their patients. For each new patient, the nursing sisters or embryologists — those who communicated the near daily grading of embryos to patients — would have to explain what a 3 meant, what a B meant, and proffer mollifying or reassuring words as a result. Some clinics thus went with simpler grades of 1, 2 or 3: 1 being poor, 2 being good, 3 being great. All clinics communicated the embryo grades to patients nearly every day, filling them in on the progress of their *in vivo* "embies."[83] Often these grades corresponded to the ultimate fates of embryos, of which there are only three options, either waste, frozen, or transferred.

Increasingly though, clinics were using pre-implantation genetic screening (PGS) as a way to ascertain viability of embryos. While embryos may *look* fine, PGS assesses the genetic composition of embryos to ensure that the chromosomes are all present and all doubled fully — no gaps, no triples, no missing genetic code. This is done through a biopsy of the embryo by the clinic, either at Day 3 or Day 5[84] of embryo *in vitro* development. An embryologist at the clinic will extract cells (one or two if done on Day 3, and a perhaps five or six cells if done on Day 5, at which point the blastocyst has more cell available to extract). The cells are sent via courier to the genetics lab. During the time of my fieldwork, there was one genetics lab available in South Africa, Genesis Genetics, based in Sandton, Johannesburg. Turn-around time can be as short as 24 hours for the results. Clinics received a report detailing each embryo's genetic composition, indicating if the embryo is euploidy or aneuploidy.[85]

---

[83] The colloquial term on Fertilicare.co.za for embryos, reflecting the tendencies in South African English and Afrikaans to render objects "cute," and how embryos already become viewed as cute, similar to children.

[84] There is a growing tendency for Day 5 biopsy over Day 3; this is due to the belief that biopsying embryos with so few cells can impinge on their development. Some suggest that any invasive testing technique (i.e., biopsy and PGS/PGD) is not worth the risk to embryo development (Swain, 2013).

[85] In essence, this refers to have the "correct" number of chromosomes (a multiple of the basic set of 23) or the "incorrect" number, that is having additions or missing pieces.

“It’s science, but it’s not maths”

Elina Helosvuori (2018) observed in embryo selection in Finland that patients participated in the assemblage of embryo viability. In my observations too, patients participated though through slightly different processes. Many of the clinics had a similar approach for patients to make choices about the number of embryos to transfer or freeze. Already in scrubs, having waited in anticipation, and sometimes already on the theatre table and ready for the transfer, physicians would explain to patients the number of embryos, their current grade, and offer recommendations for how to move forward. clinics.

Abigail and Oliver, who were introduced in the chapter’s opening vignette, were in the recovery area, both dressed in their theatre scrubs, and Abigail desperately needing to pee. She was ready for her embryo transfer, and the needing to urinate was a result of having to come to that procedure with a full bladder so that the sonogram could provide a clear view of the uterus. Dr Theron had come by recently with some good news — they had three embryos that had made it to the Day 5 blastocyst stage and could be potentially transferred back or frozen for later use. Three was more than they had expected. And now they had some choices to make. Abigail and Oliver had three embryos — described as “good,” “medium,” and “not-so-good,” the latter not likely to be used or frozen. However, the doctor asked them if they would like to freeze one for a potential second child, or put two back in now? Suddenly, Abigail and Oliver felt flush with choices and options; Abigail teased Oliver that he should start earning some good money to afford two children. They played with different metaphors to describe their options.

> **Oliver**: Because if a doctor, who is quite clearly good at what he does and they’re like ah it’s really good you know. And they’ve all been genuinely quite surprised. You know, that’s a good sign for me. But for me, that tells me that it doesn’t happen very often, which means if you are to, not say, blow our chances — that’s horrible — you know, but spend all your money right now.
> **Abigail**: Fire all the bullets
> **Oliver**: Fire all the bullets from the gun. *Bang bang bang*!

> **Abigail**: That's how they do it, I think. They just, *pow*.

Oliver worried that if they had to try another cycle, they would not get as high a yield of viable embryos as this cycle. Abigail agreed; she worried she was turning 44 in a few months and felt "every month that goes by . . ." meaning every month rendered her eggs less and less viable and lowering chances. They should be frugal with their embryos now as they may not get good ones next time. And leaving an embryo in South Africa, despite her home being in London, was not so bad. It was a direct flight and she could do her work remotely. The savings they had realized through doing a cycle in South Africa versus in England more than covered a round-trip flight. But would her chances improve if they put two in instead of one? Should they use "all their chances" in one go? To add to the deliberations, the doctor told her that her uterine lining was "not-perfect"? Should they save "the best" embryo for a frozen cycle, maybe when her uterine lining improved?

> **Oliver**: It's not maths. It is science, but it's not maths. Well, it's like, it's not two plus two equals four. It's definitely . . . there are no definites in this.
> **Abigail**: Yeah I know. There are no guarantees.

> **Abigail**: I'm going to ask [Riana, the embryologist]. If the chances of pregnancy are not that much more with one versus two, I think we go with one. Which is what you [Oliver] want isn't it? I can tell. You are thinking one and freeze the other two.

They continued their discussion: The cost of freezing (not expensive enough, they decided, to factor in their decision); Abigail's consideration of donor eggs at the next stage; how lucky they were to have three blastocysts, which was over and above their expectations; and the tan that Abigail failed to acquire in her three weeks in South Africa. Finally, Riana joined them, and although they had mostly settled on only putting one embryo back, they asked whether transferring two would increase their chances at all. "Actually very little," she said. "Two [embryos] doesn't double your chance. It does increase your chance of multiples." In the end, they decided to freeze "the best," and transfer "the second best." They thought, with a bad lining and a maybe embryo, they should preserve their "best chances" for the "best lining." After the transfer, Abigail panicked. Why had she chosen, after all this effort, to use the "second-best embryo"? Later, I found out that they had not gotten pregnant and were planning a return trip to South Africa to try with the frozen "best embryo."

Unlike some other medical decisions in IVF, embryo trajectories and transfers are always framed as patient choice. Oliver says, it is science, but it is not maths. Understanding embryo trajectories should not merely look at the process of embryo grading. Calculation systems may structure embryo viability, but clinic understanding of patients and their biography shapes scientific practice and medical decisions. Further to this, when it comes to trajectories and transfers, patients very much participate. Unlike the case in Finland, where patients could decide to transfer embryos thought to be unviable ("pity transfers"), the participation of patients in my experience focused predominantly on the quotidian decisions around making it to the clinic, financial investment in travel,[86] the costs of freezing, and viewing embryos through the lens of scarcity.

In the case of Oliver and Abigail, they had the personal financial resources to support trying each embryo, one at a time. For some repro-travellers, the financial outlay needed for travel encouraged "risky" behaviour, such as the transfer of multiple embryos at once, to avoid the cost of repeated trips across borders (Thorn, 2015). Abigail's interpretation of the doctor's recommendations for her read as surprise at their outcome — and thus encouraged her "frugality" with the few "bullets" she had to use, costs be damned. In order to be frugal with embryos, one had to potentially spend more. Being frugal in the embryo economy meant potentially spending more financially.

Frozen wastes

---

[86] This was not only the case with cross border repro-travellers. Among South African patients, I met several who flew across the country or drove more than eight hours to the clinic.

Grading and selection systems thus produce the outcomes of embryos. Many are discarded as medical "waste." For those that stop developing *in vitro*, the monitoring and embryo sheets provide the paper justifications for waste trajectories. PGS testing can offer assessments for the embryos' genetic composition, and those deemed aneuploid (abnormal) are disposed of.

Embryos that are still deemed "viable" via embryo grading, yet are not transferred immediately, become cryogenically frozen. The freezing of embryos, a technology that emerged in the 1980s, fundamentally shifted and challenged the space and time alignments of childbearing (see Landecker, 2005). However, it also became something of a problem for fertility clinics. As anthropologists such as Risa Cromer (2018) have explored, the presence of frozen embryos in the United States became a rallying cry for life politics. As Elizabeth Roberts (2011) argues, the freezing of embryos in perpetuity fundamentally challenged notions of potentiality. In the United States, frozen embryos were being impeded from fulfilling their biographical potential as indivualized lives. In contrast, in Ecuador, families confronted with frozen embryos worried about their potential as kin and were concerned about freezing as potential circulation and abandonment of family. Mette Svendsen's (2011) work on embryo potentiality traces how some embryos, once thought of as potential biography, become articulated as potential "waste," and are then recovered into "boundless potential" as stem cell research objects.

According to those I interviewed, most patients end up using their frozen embryos. Some do what one fertility specialist described as a "why not?" transfer. This was when patients felt they had "completed their families," yet had embryos remaining. Feeling uncomfortable with the idea of them simply remaining frozen after so much effort to produce them, some patients went ahead and transferred "extra" embryos anyway. In rare instances, a patient would donate them to other patients. Others simply left them frozen.

The latter group confounded embryologists, who did not know what to do with the frozen embryos left in their storage. The law gave them the power to discard frozen embryos that were "unclaimed" after 10 years (National Health Act, No. 65 of 2013, Regulations 2012). The embryologists I spoke with said that they understood this provision as granting them the power to discard 10 years after patients no longer paid the storage costs,[87] and could not be contacted. Too much frozen material was a problem simply because of space. Tanks were large and accumulating them in small labs cluttered the small spaces where staff had to maneuver. Despite the law empowering clinics to discard unclaimed material, no embryologists said they would discard embryos. Some would discard unclaimed sperm samples, but definitely not embryos. "It just feels wrong . . . " said Riana, not knowing how to justify keeping them. "It just seems like a waste."

"What ratio is compatible with life?"

At a weekly meeting, one lab staffer raised trending discussions within embryology about mosaicism among embryos and whether this precluded the validity of PGS (see Gleicher et al., 2016; Marin et al., 2017; Spinella et al., 2018). Mosaicism in human embryology refers to embryos presenting with two distinct cell lineages, *both* normal and abnormal cells. This has long been known in embryology, but the implications for clinical IVF work, and in particular the efficacy of the embryo selection methods of PGS, has only lately been discussed.

When embryologists biopsy a Day 5 embryo, they extract about three to eight cells of a blastocyst (the Day 5 embryo) that has between 300 to 500 cells. Those handfuls of cells come to

---

[87] Patients paid a monthly or annual fee to store frozen material. This covered the liquid nitrogen used to keep the material frozen, and the space it occupied.

stand in for[88] the entire collection of blastocyst cells. If they test those cells with PGS or pre-implantation genetic diagnosis (PGD) and find that they are abnormal, the typical clinical approach has been to discard the embryo in the belief that it is not viable. Yet with mosaics, the embryo may have both normal and abnormal cells; what if they have simply biopsied the abnormal cells, yet enough normal cells remain in the blastocyst, which may produce a viable pregnancy and "normal" child? Research (Greco & Minasi, 2015; Gleicher et al., 2016; Spinella et al., 2018) has shown that "healthy live births" have ensued from mosaic embryos.

The discussion on mosaicism led to a doctor to comment: "The question is, what ratio is compatible with life?" Meaning, what ratio of mosaicism, what per centage of abnormal cells within an otherwise normal embryo, could produce a "viable" child? The question I pose, in the doctor's terms, is, what *kind* or quality of life? In my terms, what is viability? What valuations are at work in these discussions of life and viability?

The discussion in the clinic put these questions differently, in terms of "risk." Could they risk transferring potentially aneuploidy (abnormal) embryos? The problem being, if the embryo is too mosaic (too many abnormal cells), it will either fail to implant or will result in a miscarriage. If less mosaic (mostly normal cells), it could potentially produce a "normal, viable" child, but it could still result in a live birth of a genetically abnormal child (with conditions such as Downs, Klinefelter, or Turner syndromes). In the discussion, the doctors kept reiterating that "best case scenario" would be miscarrying. They stated they would rather transfer embryos that have too many abnormal cells for viability (with an outcome of miscarriage) than risk the live birth of children born genetically abnormal. The staff agreed to change nothing in their clinic protocol for the moment and to continue their current practice of discarding any embryos deemed genetically abnormal from PGS. While the

---

[88] That five cells could come to represent the chromosomal normality or abnormality of a given embryo reminded me of the scene in Latour's *Pandora's Hope* (1999), where he describes the work of soil scientists and botanists cutting samples out of the forest that become references of the thing (forest, for instance) itself through a series of transformations.

new research did not change clinic practice, the doctors and nursing staff found it useful as an explanation to offer their patients as to why even screened and "genetically normal" embryos may not be viable; that is, why the failures despite "genetic normality." Rather than then turning to explanations that questioned clinical practice or placed responsibility at the feet of patients or doctors, the new research offered them a new explanation. Instead, they could say that the embryo may have been mosaic, had abnormal cells among the normal (which were tested).

Conclusion

I started this chapter with a case where patients had to decide what to do with certain embryos; which to transfer, which to freeze. In looking at the routine daily clinical and laboratory practices that contributed to this moment of decision-making, I described the knowledge systems in place that build an economy of scarcity and frugality. This, in turn, contributes to the producing the potentiality of each and every scarce tissue —particularly oocytes and embryos. Further to that, knowledge regimes, such as embryo grading, provide calculative backing for differing embryo trajectories, that is whether the futures of those embryos are for transfer, discarding, or frozen. In the final discussion that I presented, staff fretted that they may have discarded embryos that could potentially become viable pregnancies and babies. However, the question of viability or healthy babies that could come from mosaicism, and indeed, the discussion concerning the "risk" of genetically abnormal babies reveals that certain kinds of children are sought after. The discussion around mosaicism is one of the rare instances where it was articulated that certain kinds of children are not particularly desired — genetically abnormal, with conditions such as Downs or Turner syndromes. In my observation of fertility clinics, the birth of a genetically abnormal baby, such as Downs, would be read as a kind of failure.

Further to that, the anxiety over discarding potentially viable embryos reflects how clinical practices instantiate relations to embryos more generally. Embryos for use in IVF are scarce, and like oocytes (Waldby, 2014), there are rarely enough embryos for a viable pregnancy and live birth, contributing to low success rates of IVF that I described in Chapter 3. The creation of an embryo economy shapes the relations to embryos, yet that sense of saving and protecting each embryo (each the potential *one*) simultaneously raises the stakes for patients. The sense of thrift becomes more complicated by the fact that the only way to "know" a truly good embryo is to use it. As Melissa stated in the Section's opening vignette, to know that IVF works is to have a healthy child.

Medical professionals try to keep the conception, gestational, and neonatal stages as "safe" as possible, which means keeping an eye on the potential for multiple gestations. Multiples can be risky, and as some of the cases presented here show, the potentiality for multiple gestations is within the temporal scope of reproductive specialists, many of them who were trained previously in obstetrics-gynaecology. However, as Lochland Jain points out, this narrow version of safety from the view of the fertility industry ignores the potential for carcinogenic effects of hormone stimulation in the long-term (2013:128-150). She argues, that "The sentimental innocence of children themselves forecloses questions about the social and physical costs of how they are produced" (2014: 146). The industry's general disinterest in tracking the long-term outcomes of births, babies, and those who inject and absorb hormones points to a decidedly limited temporal scope of safety and what potentialities are of interest to the capitalist and scientific outlooks of the fertility industry.

These two ethnographic chapters have, at different scales of enumeration, shown how counting regimes actually operate and work within affective registers in the fertility clinics. The whiplash movement between these two —calculative and affective— provide a kind of gap, not only for the moral impetus to intervene, but also the profiteering in such interventions. That is, one is morally compelled to intervene, but one only can at a cost. Furthermore, I have argued that knowledge systems —ways of knowing, ways of counting, the kinds of questions posed in fertility medicine and embryology—demonstrate a particular "scoping" attribute of potentiality. Babies and numbers work in tandem again: numbers contributing toward the prediction of certain futures, and babies acting as affective guards against asking about futures, fears, and risks that are beyond those scopes.

The question of safety and potential risk brings us well to the next ethnographic chapter on morality, gender and sacrifice and the way that IVF provides a platform for a kind of pre-performance of good parenthood, particularly good motherhood, through modes of sacrifice (notably though, not the sacrificial risks of cancer). The next section of this dissertation continues to posit the question what kinds of children are sought and within what kinds of families? Certain kinds of children are valued via IVF, primarily those genetically linked and racially reflective of the parents. What I argue is that IVF in South Africa tends to reproduce certain normalizing regimes of the family where we can see what kinds of children are sought and imagined via IVF.

Intro to Section 2

Adrie

I met Adrie at her office in the Northern Suburbs of Cape Town. We went to a nearby café and spoke for hours — about her family history, her conversion to Islam, and her desire for a child. Adrie had been born in the winelands, an agricultural and wine producing area close to Stellenbosch, about an hour from Cape Town. The winelands are famous for their gorgeous scenery and wine farms, and infamous for the poverty-level working conditions of predominantly coloured farm labourers, and the embodied history of the *dop* system.[89] In her sharp blazer and sunglasses, sipping coffee in an upscale café, Adrie's story reflected multiple worlds, histories, and intersections: Violence, care, shame, race, poverty, apartheid, kin. And the ongoing haunting of origins. A young, smart woman growing up amid these histories and hauntings, Adrie carried them with her, recounting them with both ease and honesty, yet acknowledging the ongoing work it took to move forward. "I have unresolved issues, I get very emotional," she said, almost apologising to me after I asked if she was OK to keep talking. But Adrie was clear with me; she wanted me to understand how she had gotten to this stage in her life, how she was now in her early 50s and trying to have a child.

Adrie recounted her childhood: "Abject poverty," she declared. "I grew up on a farm, we lived in a shack . . . I really had that kind of life; people drinking and fighting and killing each other. But I knew in my heart I don't want to live like that. The only way for me is to educate myself." After Matric,[90] Adrie worked at a chemist for three years while she applied to work at a university. She had heard that if she was employed at a university, she could study for free. Eventually she got a job at the University of the Western Cape and earned her bachelor's degree. She later earned a scholarship to study in the United States in the early 1990s. She achieved a Master's degree, came back to South Africa, and worked, finding herself earning good money in the newly democratic South Africa in the mid-1990s.

At the age of 40 — just 10 years prior to our chat — she had found out that the man she had thought was her "biological father" was not. Her "biological father" was instead a different man, one that she also knew from the community that she came from. Her siblings, of which she was the eldest, were, from the vantage point of her new knowledge and the assumption that kinship equates with

---

[89] Leslie London (1999) outlines the health implications for the apartheid-era policies on the extremely marginalised labourers of South Africa's agriculture sector. This includes extreme poverty, poor sanitation and lack of clean water, violence, and alcoholism. The *dop* system, which refers to paying farm labourers in wine and alcohol, began in the early Cape Colony and became an "institutional element of farming practice in the Cape over the next 300 years and an important element of social control exercised over indigenous peoples of the region" (London, 1999:1408-1409). Anecdotal evidence suggested at the time of London's writing in 1999 that the system persisted on some farms, contributing to the high levels of violence and injury attributed to alcohol, and the world's highest levels of foetal alcohol syndrome.

[90] The completion of high school.

biology, actually her half-siblings. She told me she didn't hate her parents. The man that had fathered her was a good and decent man. Her mother, she believed, just couldn't manage the scandal and the gossip from the community had they known that she had become pregnant via an affair. So she kept it a secret. At least from Adrie. When she discovered late in life that what she thought was her family was, in her view, not, she also discovered that it seemed everyone else knew, but her. She believed she was the last one to know the truth.

Her parents — her mother and her step-father — live with her now, along with her younger brother, whom she supports as he has an ongoing drug problem. She said that it was not accepted culturally to put elder parents into old age homes; white people may do that, that's fine, but in her culture, it's not OK. "So they live with me," she said. "But if they are not there anymore I can't get over the fact that I would have to live alone. I cannot be alone. Even if there is somebody breathing in another room, somewhere, but me, for me to live alone, it just scares me."

At the age of 35 and single, she started inquiring about using donor sperm and having a child on her own. She had had boyfriends before, but found herself nearing middle-age without a partner. She had two surgeries to remove uterine fibroids, non-cancerous growths in the uterus that some doctors say interfere with fertility or pregnancies (see Casini et al., 2006). She had a friend donate his sperm, and underwent three IUIs, but none were successful. At 51, she returned to her gynaecologist and fertility doctor. She was still having periods and didn't realise that her own eggs were likely no longer viable. She said she felt "quite dumb" for not realising. The doctor didn't help, saying that she must be "smoking something" to assume she would have viable oocytes in her 50s. She tried first with donor eggs and donor sperm. Despite not using her own gametes, she still had daily injections to thicken the uterine lining, which she found incredibly cumbersome and difficult to manage. One in particular required assistance — an oily, viscous injection into the muscle of the buttocks. Most patients ask family members, partners, or spouses to do those shots. But Adrie, who travelled often for work and lived with parents who she didn't want to tell about her ART journey, had to navigate it on her own. After the embryo transfer, Adrie went to a coffee shop and sat. Sipping coffee, she thought to herself, I might be pregnant. She was excited. Yet, it didn't take. At 51 and having spent about R100,000, she was not pregnant.

When I first met Adrie, a few days prior to our time at the café, she was at the clinic again, a year after her failed attempt with donor eggs and sperm. The clinic had a donated embryo from a Muslim couple, which they thought Adrie might want to "adopt."[91] Knowing that she was a convert to Islam,[92] the physician thought she might be interested, because the couple that was donating the embryo was Muslim.

When we spoke, she was deliberating the decision. She had considered more "traditional" adoption — that of an infant or a child — but worried about unknown factors, such as foetal alcohol syndrome, and "not having any control over the genes," as she said. She didn't mind that the child would not be genetically related to her. She wanted to be pregnant, but she more so wanted to know the background, the origins of the potential child, and have seeming control over whether these factors shaped her child. She wanted to be able to pick. She wanted to manage the genetic contribution.

> The embryo that she [the clinic staff member] told me about, they are educated, but I know for a fact that they are Indians. And she knows I know that many Indians are very good business people, and they are very successful. I am not sure if they are [Cape] Malay or Indian, but I

---

[91] Adoption is the term the industry coins when an unused, frozen embryo is used by a couple or individual who did not commission its creation. See Risa Cromer's work (2018) on embryo adoption in the US.

[92] She was raised in the Anglican church, but in her 20s began to question the faith. After exploring various other religions in the search for something that resonated with her, a friend lent her an audio tape of the Qu'ran. She listed every day, rapt. She had converted just over four years prior to our meeting.

> guess that is very important for me to find out if I go that route. I mentioned that they are very successful business people. Lately a lot of the Indians send their children to educate themselves, and many of them become doctors or lawyers, engineers, in those types of things. I think it's also what you inculcate, you know, in the child sending him or her to a good school and encouraging learning. So, I would be happy to consider that particular embryo.[93]

At the time, she was concerned about finances and trying to raise the money to undergo treatment with the donated embryo. A few months later, I emailed her to find out what she had chosen. Adrie had decided not to go ahead with the donated embryo, listing three concerns. First, she was ambivalent, going back and forth on whether to move forward, and couldn't feel settled even after praying on the matter during the Holy Month of Ramadan. Then there was the cost and her job had recently become insecure. Finally, she was worried about the potential for accidental incest. "I was concerned about the child accidentally falling in love with his/her sibling," she wrote to me.

Hauntings and managements

Adrie was an outlier in many ways among of my cohort of participants. Demographically, for one. She was single, while the majority of those I interviewed were married; she described herself as coloured, while the majority of patients called themselves white; and she was older, in her 50s, while the others were often in their 30s. However, her story resonated with the others in different ways. For one, her story of infertility was not simple, nor simply about the desire to have a child and the difficulties in conceiving. It was about imagining her future self, with no one else in her home after her parents eventually died. It was about contending with her own past; this was a common element of many patient stories I heard, although Adrie's was particularly marked by poverty and violence. It was about financial security, for herself and her family. It was about obligations to kin, even those who had hurt her. It was about past secrets, potential secrets, and new knowledge, some that would make kin and some that would keep kin. In another frame, Adrie's story was also about motherhood. Her understanding of her own mother as both kneeling to social obligations and gossip, and also inflicting pain that seemed to come from an intersection where gender, shame, and sexuality collided. Her own desires for motherhood could be seen from a space of doing things differently than how they had

---

[93] Such racial/cultural stereotypes are common in South Africa; see Chapter 6 for a more nuanced discussion.

been done before; that is allowing for herself a moral orientation of the future, and thus a turning away from the past. The story is also inflected with the history of race and racialization in South Africa, and how the racial segregation system of apartheid structured labour, social life, and social obligations.

Among the numerous tropes Janet Carsten (2003) explores in relation to her questions of kinship, she begins her book *After Kinship* with the trope of the house. She describes her own childhood house, a domestic space of seeming stability "in juxtaposition to the dislocations of history" (2003:35). The house is "private," yet history, the state, and politics seep in and shape. The house is the site of domestic quarrels and shared meals, memories, and shared resources; a space where "kinship is *made*" through the "intimate sharing of space, food, and nurturance that goes on within domestic space (Carsten, 2003:35, italics in original), and yet intimately shaped by wider social processes. While most of her analysis is dedicated to looking at the ways that domestic life, shared meals, shared spaces make kin, she also argues that in this way it shapes, produces, and reflects social hierarchies, such as gender. Houses, she argues, were a focal point of maintaining colonial order (2003:51-53). Houses, or rather where one could make houses and reside, were a central facet of apartheid spatial planning, ensuring the racial segregation of South Africa's population.[94]

In the next four chapters, I step off from Adrie's case to explore three thematic areas: Morality and gender, race, and kinship. Here, I explore the facets of potentiality that relate to hauntings of history and the management of uncertain futures. Embryos created in fertility clinics, argues Sarah Franklin, are "reshaping our understandings of life, death, health, kin, progress, hope, sex, capital and cure" (2006:171). Alienated from particular bodies, extra-corporeal embryos disrupt these understandings, causing both unceasing anxieties, and myriad hopes, because of their potentiality.

---

[94] See also Ross (2010) for how the post-apartheid housing policy and the imagination and desire for "decent" living shapes social relations in the Cape.

Potentialities invoke a temporal present where we envision the future — in the form of expectations, hopes, fears and anxieties — however, the past emerges in framing those visions. For example, in Vietnam, Gammeltoft (2013) demonstrates how temporal terrains of past, present, and future merge as pregnant women fear the results of sonograms, as they could reveal a disabled child — haunting after-effects of Agent Orange from the Second Indochina War. The future is not one of limitless possibilities; possibilities in the future are framed and troubled by the past and the fears of what could be born as a result. Thus, which South African histories come back to life in the present? For those engaged in ARTs, from medical professionals to users, what schemata do they draw on?

In the second half of this thesis, I ask how the normalising orders of morality, race, and kinship, as regimes in constant need of stabilisation, work to preclude certain potentialities that would threaten social orders. Much of Sarah Franklin's work has been concerned with the tensions between the potentiality of IVF, embryos, and stem cell technologies and their embeddedness within regimes of normalization. In *Biological Relatives*, she writes:

> IVF is normal because it already belongs to techniques of normalization — including, among others, those of marriage, kinship, gender, scientific progress, experimental embryology, livestock breeding, baby showers, consumer culture, and medical technology, not to mention Hollywood cinema, *Sex and the City*, Brangelina, and Mumsnet.com (2013:6).

Yet, IVF is simultaneously potentially "meaning threatening" (Inhorn, 2003:20), in so far as it can challenge several of these techniques of normalisation. IVF can potentially threaten orders of kinship (particularly in third-party IVF, with donors and surrogates), race (see for instance lawsuits pertaining to accidental fertilisation and "mixed race" babies as a result), and the ethics of life (what to do with frozen embryos?) and death (is it ethical to excavate gametes from the frozen gonads of dead partners?) Several ethnographies have demonstrated how "local moral worlds" have shaped the reception, adoption, and application of reproductive technologies (Kahn, 2000; Inhorn, 2003;

Simpson, 2009; Hampshire & Simpson, 2015), effectively "recalibrating" (Paxson, 2006) the practice of IVF within local religious and moral orders.

IVF in South Africa has the potential to threatens orders of morality, gender roles, kinship and race. In context of South African histories, which these chapters shall explore, these orders and the threats to them are particular fraught. Does race hold with the seemingly "natural" link between family and race can become untethered? Should everyone have a "right" to be a parent? If being a mother is a "natural" extension of womanhood, how can the process of IVF reassert gendered personhood? How can one prevent the children born via a single sperm donor unwittingly having romantic relationship in the future? Despite the dystopian visions that IVF may invoke, scholars have found that while IVF has the potential to make parts of the world differently, most often it doesn't (see Thompson, 2005). What is at stake in IVF is that certain normalising orders — the making of "good families", the preservation of certain race and kinship logics — would be done improperly or illegibly. The exploration of potentiality in this second section works with the observations from Bob Simpson, who argues that, "At one end of the spectrum, ARTs are incorporated into familiar projects and idioms; far from changing the world, their potential is to make the world conform to expectations that already exist..... At the other end of the spectrum, ARTs betoken challenge and the possibility of radical shifts in the way that relationships and indeed society itself might be thought about and, quite literally, conceived" (2013:S87). In the following chapters, I explore the ways that practices, images, people, objects, and "familiar idioms," are mobilized in the management of ensuring the perpetuation the social order of the day.

Chapter 5 argues that gendered performances of morality emerge through tropes of sacrifice, thereby preserving the "niceness" and sentimentality of producing children, despite the landscape of commodification in which it takes place. In Chapter 6, I introduce the concept of "curature," a response to Rose's (2007) depiction of pastoral powers, as a way to theorize the work clinic staff in the matching of gamete donors that in turn reproduces local idioms of racialization. Chapter 7 takes a historical look at the way the state has managed the risk potential of IVF, opening up the family to "reproductive others" and thus threatening the normative understanding of family relatedness. There, I unpack the history of IVF legislation and policy and how this reflects shifting state ideologies from apartheid to the democratic and neoliberal present. Chapter 8 looks at how kinship is managed in clinical practice via recourse to different forms of affinity and attachment and thereby preserving the familial over the potentially commodifiable.

Chapter Five:

Love, money, and other drugs: Moral landscapes of the fertility clinic

> Women did not argue, they did not stop to consider the consequences and they did not calculate the cost or the trouble of their actions. They were motivated irrationally, solely by love (Brink, 1990:281).

Despite the increased "normalization" of IVF and gamete donation in South Africa (Namberger, 2017), the potentialities of IVF remain a continuing concern and an area where actors constantly navigate; ideas about "good" parenting, morality, and motherhood were sites where anxieties emerged — and initiated attempts to manage them. In this chapter, I explore the making of moral landscapes in the clinic and the pathfinding navigations of clinic staff, egg donors, and patients within the South African terrain as a way to demonstrate modes of good parenthood, particularly "good motherhood." Thinking about how surveillance of women has moved from not only pregnancy but to conception and even pre-conception (Waggoner, 2015), I was interested in how the fertility clinics, as a space of "pre-conception," provided a platform for the enactment of gender, morality, and motherhood. Further to this is the context, where medical professionals in the clinic operate at times as "gatekeepers,"[95] something that patients commented about to me at times. Asserting medical professionals as gatekeepers is not to assume the corollary, that patients were passive and subordinate to the judgement of medical professionals. Instead, I view clinical spaces as negotiated spaces of performance where patients participated in asserting their value and morality as potential parents, in markedly gendered forms.

Amid the potentialities of IVF, the anxiety over moral transgressions, particularly gendered ones, becomes managed through the invocation and normalization of the moral landscape of the clinic. I argue that the management of the morally transgressive potential of IVF, in relation to gender, props the site up as a space for moral performances of "good womanhood," and in particular, "good motherhood," that reflect historical tropes of gender and morality and materialized through tropes of sacrifice. In the second half of the chapter, I look at another figure in ARTs that is often considered particularly troublesome (see Pande & Moll 2018) for its transgressive potential: egg donors. Egg donors both adopt and become framed by similar tropes of good womanhood — altruistic, responsible, generous, and enduring —in the context of the clinic and their donation.

Historical frameworks of motherhood

How has "good motherhood" looked in South Africa? Historical and current discourses, both popular and scientific, on motherhood in South Africa inflect the current discussions in fertility clinics and shape the moral landscape.

In white Afrikaans-speaking contexts, the *volksmoeder* ("mother of the people" or "mother of the nation") figure emerged in the 19th and 20th centuries as a form of idealized womanhood that

---

[95] The role of medical professionals as "gatekeepers" is a continuing theme throughout this section. For other work in reference to the gate-keeping role of medical professionals in ARTs, see Becker & Nachtigall, 1992; Ikemoto, 1996; Roberts, 2012; Homanen, 2018; Deomampo, 2019.

blended respectable femininity with images of maternal suffering and sacrifice, courage and strength, and enduring love and loyalty (Brink, 1990). Elsabe Brink (1990) follows the creation and trajectory of the *volksmoeder*. Among her examples of popular writing during that period was the book *Die Boervrou Moeder van Haar Volk* (*The Afrikaner Woman, Mother of the Nation*[96]) by Willem Postma. Postma's book was published in 1918, amid a growing concern over the moral wellbeing of single Afrikaner men and women urbanizing in response to a population explosion and impoverishment in the rural areas. The book, Brink suggests, expands upon the *volksmoeder* concept of suffering and sacrifice, but also provides a blueprint of further characteristics that emphasize motherliness and nurturing of the *volk* (Brink, 1990:280). To demonstrate this, Brink analyses Postma's description of the demonstration against the imprisonment of the Boer General Christiaan de Wet of Afrikaner women in Pretoria in 1915 as an act of love. Love, suffering, courage — these were the characteristics of a distinctively raced and classed vision of respectable womanhood.

The *Nasionale Vrouemonument* (National Women's Monument), which was erected soon after the end of the South African War and the creation of the Union of South Africa, depicts weeping women surrounded by children, and, argues Anne McClintock, further "enshrined Afrikaner womanhood as neither militant nor political, but as suffering, stoical and self-sacrificing" (1995:378). She argues that the form of idealized womanhood and compelled respectability of the *volksmoeder* served the strict gender order that was integral to the maintenance of Afrikaner nationalism, paralleling the racial order of apartheid. In her book *Imperial Leather*, she writes, "Women were the (unpaid) keepers of tradition and the *volk's* moral and spiritual mission" (1995:377). They were duty-bound — to their race and nation — "to reproduce and nurture the *volk*" (Klausen, 2010). In this way, Kathleen McDougall argues, the formation of Afrikaner identity provided not only a cultural history

---

[96] Although literally *boer* means "farmer," it is also a term for Afrikaners defined on the basis of their language; *vrou* may translate either as "woman" or "wife."

and sense of rootedness, but also a future, a cultural destiny delivering a racially pure *volk* (McDougall, 2014). The identity works temporally, as a way to frame a shared past culture and as an impetus toward a particular future —and the reproduction of culture and race procreation of certain kinds of children. Neil Roos's (2015) work on Afrikaner materialism reflects the deep-seated anxieties in relation to certain categories of white mothers — those who had children too young, those who had children out of wedlock, those who were poor and rural. Among the responses to these anxieties was a programme to teach young, working-class Afrikaner women how to properly rear young children through "practicing" on infant orphans.

In contrast to these tropes, certain kinds of mothers — black mothers, poor mothers, teenage mothers — have historically been pathologized, and the ethnographic record reflects that they continue to be so. Michelle Pentecost and Fiona Ross (2019) in their article on local histories inflecting the First Thousand Days public health policies, reflect on the ways that high rates of infant mortality have often been blamed on maternal ignorance and lack of proper child rearing rather than a reflection of poverty, political conditions, and malnutrition. They argue, "This trend has continued: Health issues are increasingly identified as developmental problems, rather than as questions of how resources should be distributed" (Pentecost & Ross, 2019:5). In the post-apartheid context, a persistent moral discourse around teenage motherhood (Mkhwanazi, 2014b) serves as a visible counter to the invisible norm, the "taken-for granted" "good mother" (Macleod, 2001). Naomi Marshak's (2015) research in KwaZulu-Natal focused on a community-based organisation designed to teach childcare to "non-biological" care-givers, in the context of widespread HIV deaths and orphaned children. Again, despite the majority of participants being grandparents (thus having already raised children), the emphasis within the programme was on fostering a particular "skill" in caregiving, thus assuming a present lack. Notions of what constituted a "good mother" also inflected the dispersal of donor breastmilk in neonatal settings (Waltz, 2015:56-60). In Waltz's findings, "good mothers" were those of a certain age (not too young), those not using drugs, alcohol, or smoking, and those who visited regularly, displaying normative ideas of mothering and devotion. The ethnographic data reflects on what is pathologized and what are seen as good modes of motherhood, both historically and contemporaneously.

Moral landscapes and pathfinding

Agnar Helgason and Gisli Palsson, introduce and describe "moral landscapes" as such:

> Our suggestion is that the features of this moral environment can be likened to the topography of a landscape, intersected by pathways, boundaries and spheres. The advantage of this view is that it abandons the restrictive dualism of embedded and disembedded economic behaviour and the related dualism of gift and commodity exchange, in favour of a more heterogeneous and realistic situation which sees different forms of exchange with a diverse array of things co-existing and interacting in the same social universe (1997:453).

The authors introduced this concept to think through the novel moral arrangements related to the commoditization of new areas of life; in their ethnographic case, they refer to fishing quotas in Iceland, but also invoke egg donation in their review of related literature. The authors write against the idea of disembedded/embedded economies, where some societies have economic and social relations completely intertwined (i.e. anthropology's "Others"), and other societies have separation of spheres between economic and social life (i.e. "The West" with its supposedly clear separation between "the market" and "the family").[97] In response to moral outrage over the commoditization of fishing rights, and reviewing multiple ethnographic locales with surprisingly similar moral outrages against the movement of "social things" into market economies, Helgason and Palsson (1997:459) suggest a topographical understanding of a moral economy. Such a view, they purport, provides an ethnographic gaze to understand the landscape as "in constant formation as an amalgam and synthesis of individual

---

[97] Similarly, scholar Anna Tsing (2013) has challenged the restrictive boundary of the dualism between gift and commodity exchange through her work on the social ties embedded within commodified mushrooms.

moralities, which are influenced, negotiated and debated in social life" (1997:466). While a spatial metaphor, it also works temporally. While pathfinding or pioneering within this landscape involves pushing forward into new terrain, the terrain itself is shaped by historical forces.

Mette Svendsen and Lene Koch (2008) used the idea of a "moral landscape" to describe how embryos created in *in vitro* become "spare," and therefore available for donation to stem cell research in Denmark. They describe the "moral pathfinding" of medical professionals as they navigate trying to carry out successful IVF treatment for infertile couples, but also contribute what they can to the larger-scope scientific projects of stem cell research; navigating these various scales and scopes for future good, the authors argue, is a form of pathfinding. Svendsen and Koch describe the moral landscape and the "spare embryo" as becoming co-produced in the novel interactions between clinics, researchers, patients, and the law in Denmark. The authors' depiction of "pathfinding" is both reminiscent of and yet more hesitant and experimental than the tenor of "moral pioneering," the concept that Rayna Rapp (1999) uses to describe women engaging in amniocentesis in the late 1980s in New York City. While "pathfinding" seems exploratory, "pioneering" takes the tone of boldness, of striving into unknown moral terrains and decision-making contexts amid new technologies, reproductive desires, and anxieties over potential disabilities.

In contrast to moving into new and novel terrain, I found that the moral navigations taking place in the clinic are often in reference to the past. While IVF and the novel arrangements of life and family made possible through ARTs could open up unknown terrains, instead it often compelled movements along familiar pathways. These pathways provided patients, particularly women, ways to navigate IVF through gendered tropes of good motherhood, often materialising through tropes of sacrifice, love, and altruism. Similarly, while navigating local moral terrains for egg donors could offer novel articulations, donors I interviewed often relied on clear gendered tropes of good womanhood to articulate their roles in egg donation.

Resilient mothers-to-be

"Like, this really just sucks," Melissa said, sitting on her couch in Kalk Bay on a cold June evening in 2015. We were discussing her upcoming round of IVF — her first. Her husband had finished "his part." He had just undergone a small surgical procedure to extract sperm cells directly from the testicles. "His part" of the IVF treatment was over; they had recovered sperm cells, and he was recovering in the bedroom near where we sat, wearing sweat pants and streaming TV online. "Her part" was about to begin, and her mind was aflutter with outcomes, risks, what-ifs, why-mes. She worried about the risk of multiple pregnancies. She was grateful that they had the money for IVF and that they lived in a city with, not just one, but several clinics to choose from.

IVF indeed did seem to suck, and from patients and medical staff I heard about the multiple ways that it did. It was expensive. It was emotionally draining. It ruined relationships. I observed a woman coming to a fertility physician to essentially say goodbye. Her husband, she said, was "useless," not taking his medication and gaining weight; they were not going to try again[98]. Women often said they gained weight during IVF, which they attributed to the hormones, "stress eating," and "taking it easy" (i.e. not exercising), throughout cycles. Women said it took all of their time, endless driving to clinics, waiting rooms, and blood tests. One couple drove the 800 kilometres from Upington to Cape Town (more than eight hours each way) for their seventh IVF cycle. Another would drive two hours each way to the clinic for a scan and more medications every few days. Not to mention those who flew, from Australia, from the UK, from Germany, and East Africa, to stay at a guesthouses for several weeks at a time. For some, the daily injections were a challenge. Some women said they hated needles; they and their partners, who often helped, detested injecting the hormones. Others said they were

---

[98] In Viola Hörbst's (2015) essay on IVF in Mali, she notes that access is not limited to financial issues with paying for IVF but also the gendered negotiations of patient participation; that is, women often had to convince their husbands to fully participate in treatment in order to access IVF.

always petrified they would inject incorrectly, messing up the whole expensive procedure. Adrie, who we met in the section introduction, simply did not know how to manage a complicated injection into her buttocks. She could not see what she was doing, and she had no one to assist her. She ended up driving each morning to a nearby pharmacy where a nursing assistant could help her. Liezl found that her emotional fluctuations diminished as she continued cycle after cycle. "You know that people come in here crying their eyes out. You just see boxes of tissues everywhere. It's just emotional. I used to cry about it, but I don't anymore. It's actually a horrible thing to get used to, the let-down, it's a horrible thing. Just to get so used to not being positive about it. But now, I'm just completely neutral, waiting patiently." She told me she didn't even have her husband come to embryo transfers anymore: "I don't need him to hold my hand." Medical staff told me they would feel the heft and weight of a patient's file and would know how much they suffered and yet continued on. "You've got your people that you see month after month," said Kathleen, an embryologist. "That you know just keep coming, you just want it to work so badly. And you know there is no reason why . . . They're just so resilient."

That IVF sucked was clear. However, I believe that the tropes taken up in relation to that strain could also in a way be productive. The fertility clinic and the IVF process, particularly for women, became an avenue for the *pre*-performance of "good motherhood," whereby sacrifice, endurance, and selflessness were valued. Among the moral fears of IVF were the conflation of family and commerce — that the family, a site of love, sacrifice, and social good — would be tainted by the sphere of the market. The fertility clinic thus became a landscape for a different kind of performance, one that reassured and reassembled the ideologies of "good motherhood" prior to any child, assuaging such anxieties through an ethos of love.

"Love letter to the ovaries"

Among the greatest burdens that women patients mentioned were the daily injectables. I sat with a nursing sister as she distributed the next round of injectable hormones to patients and provided explanations about how each worked. A couple sat in front of the nurse, holding hands, as they returned the previous round's medical waste — used syringes and empty ampules of medication. The clash of glass being dumped into the specially marked waste basket made my eyes go wide — there was so much — and the patient noticed and just said, "Yeah!" Yeah, that is a lot of needles; yeah, that is my life right now, endless injections; yeah, that is how many times I have stuck myself; yeah, that is a lot of money.

I may have stretched the latter interpretation from that one-word response. However, injectable hormones do make up a large part of the cost of IVF, and efforts to introduce "low cost" versions of IVF have mostly focused on reducing hormonal stimulation (Fourie, Botes, & van der Merwe, 1988; Huyser & Boyd, 2013; Naidu, Bhana, & Moodley, 2014). The daily injections take up a large part of the patient's temporal experience in IVF and are a sizeable part of the cost of IVF. A "typical" IVF cycle involves daily injections of at least two different medications for about 10 days, from Day 3 of one's menstrual cycle to 36 hours before the aspiration, on about Day 13 or 14, when the "trigger shot"[99] is given. Depending on course of treatment, many patients continue to take injectable medications for as long as nine weeks into their pregnancies. At home one day, Liezl showed me her plastic sack full of unused syringes, alcohol swabs, ampules of hormones for the coming weeks. She was just a few weeks pregnant with her second child. Her first child, also conceived through IVF, was at the small table having a post-nap snack of a peanut butter and apricot jam sandwich. Holding up various elements of her medicine and accoutrements, she explained: "This one I have to inject into my bum every morning. And one of those. And that, and a little alcohol swab. One of

---

[99] The "trigger shot" refers to the hormone injection delivered at a specific time (as determined by the physician and generally-speaking based on the size variance of the follicles) to trigger ovulation.

these. Just to wipe the skin clean and then you inject. Yeah, so this is 35 days' worth." The plastic bag was nearly full.

Figure 12. This image went "viral" during my fieldwork and was shared on the Facebook pages of several of the South African clinics, patient advocacy groups, and egg donor agencies I followed. The image originates in the United States and was originally shared on the Facebook page of the mother's fertility clinic (Staufenberg, 2015).

Karen Throsby (2002) argues that the injectable hormones constitute a gendered burden of IVF, one that often becomes invisible in research that is based only in clinics. While the term "IVF" specifically refers to the clinical practice of fertilization in glass (i.e. the petri dish), "doing IVF" is a much longer experience in terms of duration, gendered body burden, and potential meanings (Throsby, 2002:63). Hormone injections had to be taken at the same time every day, an aspect of the experience that distressed many patients I spoke with. They told me they felt the pressure of getting it right, and not causing slight deviations that could impede their treatment. Even though most patients took injections home, I saw many do this in the clinics. Some patients came every day to have the nursing sisters administer hormones. They reported that they did so for multiple reasons, including fear of needles or not having a partner or a willing partner to inject them in hard to reach areas of the body (such as the mid buttocks). Many had travelled to South Africa specifically for IVF, were staying in hotels nearby, and therefore explained that the cost outlay and lack of other time commitments meant "why not?" have "the perk" of a professional doing the injections. Many patients and the nursing sisters said women came in daily out of fear of "doing it wrong," a fear heightened by the emphasis on the precision of injection timing and the costs of the procedure. Simply put, a great deal — time, money, emotional investment, among others — was riding on getting the injections right. As the image in Figure 13 demonstrates, injectables become a sort of gauntlet that women wanting to be mothers must navigate. In contrast to the voluntarily childless, who face the aspersion of being "selfish" (Modell, 2004), the involuntarily childless and would-be-mothers of the fertility clinic have the strength, fortitude, and willingness to sacrifice.

Figure 13. An image shared on Facebook by a Johannesburg-based fertility clinic. Published 12 March 2017.

If patients could not or did not want to have their injections at the clinic, the nursing sisters provided instruction. Some were easy: Find a fatty part of one's stomach and inject once a day at the same time each day, the patients were told. Other injections were more complicated. Menopur, for instance, is a follicle-stimulating and luteinizing hormone manufactured by Ferring Pharmaceuticals. To administer it, one must first inject sodium chloride into the powdered ampule of Menopur, carefully mix the two, and then draw the combined fluid and inject it carefully subcutaneously (i.e. just under the skin into the fatty layer). This was always done into the stomach, in the area around the belly button, when I observed the procedure. Corlie was among the sisters I observed providing detailed instructions and demonstrations on how to do this injection. Having worked in IVF clinics for years, Corlie had developed an expressive language for the procedure and, even when explaining in English, employed the Afrikaans linguistic habit of diminutives to render something affective and small, emphasizing it as "cute" (Coetzee & Kruger, 2004).

> *Fieldnotes*:
> Corlie explains that this "cocktail is shaken, not stirred,"[100] meaning, in contrast to the famous phrase, once they start mixing everything, they shouldn't shake it, just gently stir it. There are three ampules — two with hormones, and one with sodium chloride (though they call it the "water"). There's a syringe with a big needle for mixing and a small needle ("a baby needle," Corlie says) for injecting. First, she affixes the big needle to the syringe. Both the man and woman — the patients here for IVF — are watching carefully what she's doing. She pulls up the "water," and then injects the water into the first ampule that has powdered hormone in it. Then she draws the water with the dissolved powder up, explaining that you must get every little drop as "it's expensive already." Again, she warns not to shake and to draw up air to pull in all the liquid so that nothing gets out. Then she plunges the needle into the second ampule and injects the water-solution into the powdered hormone. Again, she draws it back. Then, she takes off the big needle and puts it into a plastic bag: "Keep the separation of your waste between the glass ampules and the needles and syringes." Patients are instructed to bring back their medical waste for disposal here at the clinic. The husband jokes, "Can we not inject with the big needle?" "No, no, no," says the sister smiling at his teasing, so she puts on the small needle. The woman draws her shirt up to show her belly and the nursing sister cleanses the area below her belly button with an alcohol swab, drying it with a few soft taps of the back of her hand and blowing gently once she's done. She explains during this that she calls this hormone, "A love letter to the ovaries every morning. Sometimes love hurts. A love letter because you want to draw out those lovely beautiful eggs." Corlie warns that this injection can sting a bit, and it's best to go very slowly when injecting it. She sticks the needle into the woman's belly. "If you go slower, it hurts less. You'll want to push it and get it over with, but go slowly. All good things come with time." The woman has her eyes closed now and isn't looking. She said she was nervous before, but now she comments, "It's not so bad." The sister very slowly pushes the fluid in, and then it's all done. She withdraws the needle and places it in a plastic disposal bag. Finished and *klaar*.

The demonstration reflects that injections are not merely sites of administering medicine, but are also a kind of performance, evoking gender and morality, money and love. The medicine is expensive, so one must take care, inflecting a kind of frugality with the materials in hand. Even waste has its proper place, as the couple is told what to do with the mounds of medical trash that come from these daily injections. The couple, here a husband and wife, also have their proper roles. The husband trying to lighten the mood with jokes, but also acknowledging in a way the pain that these injections inflect. Often nurses tried to encourage the male partners (generally husbands, heterosexual

---

[100] A play here on James Bond's famous line.

partners dominated in the traditional spheres of the clinics I observed) to "play their part" in the process through assisting with the injections. This reflects both the general acknowledgement of the body burden placed on women in IVF, but also allows space for men to play "the good husband": Participatory, supportive, even though inflicting pain. Similarly, the injections are "a love letter," albeit a painful one. The pain belies the sweet words to the ovaries, encouraging them to grow and be fruitful, bearing the gift of lovely, ripe eggs. The nursing sister's words are also a lesson in time ("push the injection in slowly, good things come with time") in a way that frames the lesson of patience for those in IVF. The process may take time, she tells the couple, but "good things" (i.e. the desired baby) will come. Pain and love, patience and money, husband and wife: Each of these elements are delineated, given their proper place, and rendered orderly in this injectable performance.

"This is a nice place"

While the injectables were a specific site of performance for gender, morality, and motherhood, the larger fertility clinic presented a distinct ethos for which these performances took place. Here, I describe several instances of "outlier" cases, data that point to the aberrations in order to indicate the normative moral landscape of the clinic.

There was a rumour going around the clinic, Bongi told me. She and I were in the break room having a cup of tea. It was towards the end of my fieldwork in one clinic, and I had been telling her that I was soon leaving. We had enjoyed several cups of tea over the months, during which she had told me about her daughter, an aspiring writer, and her husband, whom she met in her neighbourhood a few years prior. However, she did not want to talk about her family just at this time; there was a rumour she wanted to share with me. One of the patients, she said, had had an abortion. This was not a spontaneous abortion, or miscarriage, which were occasionally seen in the clinics prior to 10 weeks.[101] Instead, said Bongi, this patient was pregnant with twins, and was not happy about it. She had allegedly told one of the nursing sisters that she was sick all the time in her first trimester and could not take it. Later, she terminated her pregnancy. Now, she had returned to the clinic to try IVF again. "She's not right with her head," said Bongi.

Terminations of pregnancies and cases of child abandonment were on more than one occasion invoked as counter to the ethos of the fertility clinic and afront to the desires, labour, and suffering of the patients within. In another instance, a trainee physician who was studying gynaecological medicine was visiting the clinic where I observed. She spoke about her recent experience working in gynaecology in the nearby state hospital, and she framed it as directly counter to being in the fertility clinic: "I just want to tell [the women awaiting termination of pregnancy], 'Don't you know that these people want children!'" In another instance, two embryologists chatting over tea began discussing a story of infant abandonment and death in the news. The news media had reported that a baby had been found dead in a shoebox — the third such case in recent weeks, said Katherine, an embryologist: "People in here are scraping together every cent to have a baby, and they're throwing them out."

Bongi's comment about the woman's mental faculties indicate a clear transgression of the moral landscape of fertility clinics. What were they? On one hand, the woman's inability to manage pregnancy discomfort ran counter a certain formulation of motherhood in which suffering, and sacrifice are part of the role. Further, in a biomedical space of reproduction, the telos of the potentiality towards "life" is never more apparent (Morgan, 2009; DiCaglio, 2016). It is perhaps not surprising that clinics become infused with an ethos of biomedical affirmations of life. The offices were often plastered with the photos of "success stories" — babies upon babies from decades of

---

[101] According to the most recent SARA (2017) report, "early pregnancy loss" occurred in 17 per cent of IVF cycles and 24 per cent of ICSI cycles in 2014 (for those cases with known outcomes).

work. One clinic eventually had to make an additional photo book because there was no more space on the walls. Another decided to take the photos down. When I asked why, they said they thought perhaps it upset those patients who hadn't yet been "successful," a desire yet out of reach. They were aware of the contradiction: Showcases of success stories when the patients that were walking the halls were likely not (yet) successful, and they tried to manage that contradictory affect.

"You must have noticed the vibe here, the feeling here that it's very nice between all the colleagues?" one doctor said to me. I nodded quickly. Most of the time that was true. Everyone was kind, and particularly accommodating to me — the outsider anthropologist. And the patients I interviewed could not praise the doctors enough. "I love the doctors," said Sarah, 37. "They're great. They're really lovely, and they're really happy." Another couple, one that had previously visited a different clinic, told me they valued the current one because it was much more "traditional" and "family-oriented," not at all like a business where they derided being treated "like a number." I was told once at a conference that, "Happy embryologists make happy embryos." Yet, I also knew that "nice" wasn't always the case. Tempers could be short in the small, cramped quarters of an embryology lab. Once, I observed as a nursing sister yelled at an assistant for talking while they folded instruction sheets. After the sister left, the assistant mumbled "Bitch!" under her breath.

Of course, the doctor who started this story had not seen this when he told me about the nice "vibe" with his colleagues. I am sure he found his colleagues and work life remarkably warm. After I affirmed the nice feeling, he told me, "You can plan and plan and have everything orderly, but then something completely out of your control can happen." It was an odd segue into a story of an event that had occurred that weekend in the clinic. One of the patients had lost their cell phone. The nursing sister spent an hour looking for it, asking all the patients. "And you start to suspect patients or staff members," the doctor said, "Not that 'nice' feeling." The patient who lost the phone — an R8,000 phone, emphasized the doctor — left the clinic extremely upset. However, it turned out, he had dropped it into the toilet by accident. The phone was discovered after staff had called in a team to repair a toilet that was not working. The phone was found, fished out, and returned to the patient.

What these vignettes show is a series of boundary making moves between insiders and outsiders of ART usage. The clinic may be able to manage contradictory affects within the clinic — between "successful" babies and the likely unsuccessful patients — yet they also attempt to manage contradictory affects between the clinic and its location in South Africa. In this case, the rhetoric inside the clinic — presenting the ethos of valuing life, frugality, fruitful and laborious suffering, and a general sense of "niceness" that values family above profit-making — attempts a series of distancing moves from the vision of South Africa presented outside the clinic. The boundary-making, and the delineation of the clinic and its insiders against South Africa and the outsiders, parallels the modes of "good motherhood" upheld within the clinic. These are a series of racialized and classed moves that distinguish the "good mothers" of IVF.

"If they can afford this treatment, then they can afford children"

IVF is expensive. Yet rather than criticized as profit-making over parental desires and children, the costs become framed as another demonstration of the sacrifice of "good" would-be mothers and fathers. As such, the potential to be a good parent becomes wrapped in race and classed distinctions.

In the clinics I visited, the starting rate for IVF ranged from approximately R40,000 to R60,000 per cycle. Furthermore, this cost does not include additional procedures such as ICSI, which can increase costs by 13 per cent on average (Huyser & Boyd, 2013). The vast majority — 70.6 per cent of all initiated cycles — used ICSI over IVF (SASREG, 2017: 23). Other additional procedures include differing hormone protocols or additional medications, the use of an egg donor, use of a sperm donor, additional sperm prep for gender preference,[102] PGS or PGD, and assisted hatching. Some clinics also had differing prices for using the Embryoscope[103] or a "traditional" incubator. If, after embryo transfer, there remained viable embryos for later use, costs then include freezing, storage and later thawing.[104] Just in the last year, I noticed a growing presence of both local clinics and international pharmaceutical companies supporting local not-for-profits on infertility (IFAASA, 2016; "Merck foundation brings…", 2019) and sponsoring conferences and networks of African-based reproductive technologies (Shange, 2018; ANARA, n.d.). Market research firms predict that Africa will be among the growing markets in fertility treatments in the coming years (Allied Market Research, 2019). At the time of my fieldwork, "low-cost IVF" was all the rage, one could say. The Al Jazeera English television channel had aired an interview with Dr Thabo Matsaseng of Tygerberg Hospital about providing IVF on a "shoe-string budget" (Stassen, 2015; Al Jazeera English, 2016). The Belgian-based "Walking Egg Project," bringing "low-cost" IVF options to low-resource countries was garnering some attention (Ombelet, 2013, 2015). In the clinics I visited — private clinics — the medical staff I discussed this with were less than impressed. "It's not really 'low-cost'," said one, who noted that the staff, some supplies, and other overheads at public hospitals were paid through public funds. Another pointed to the fact that patients in "low-cost" programmes were given fewer hormones, which may contribute to

---

[102] Some of the clinics I worked with offered the service of additional sperm preparation that could potentially provide a greater chance of a preferred gender. Simply put, different sperm preparation methods have been shown to correlate with different gender outcomes. The clinics where this took place emphasized with their patients that there was no guarantee of a specific gender, but that it could offer a higher probability of a specific gender. The South African regulations prohibit the use of pre-implantation or pre-natal testing for sex, but not do speak to sperm prep. See Check & Katsoff, 1993.

[103] At the time of my research, several clinics were weighing up the value of investing in an Embryoscope, an incubator with built-in time-lapse cameras to track embryo development. The advantage, say some advocates and Vitrolife, the Swedish company that makes the Embryoscope, is that it offers continuous monitoring of embryo development without having to remove embryos from stable incubation; this, they say, allows for more precise selection of "good quality" embryos and prevents embryos from being subject to the potentially threatening external atmosphere (Rubio et al., 2014). The downside, said critics and several embryologists that I worked with, was the cost of the Embryoscope, and that it had limited incubator space and thus could not accommodate all their patients at once.

[104] A 2016 study by Oxford University's Centre for Evidence-Based Medicine, which resulted in several media reports in the British press (for example Cohen, 2016), found that the majority of UK clinic websites overreached their claims or failed to provide citational evidence of the effectiveness of costly add-ons to IVF cycles (Spencer et al., 2016). Such "add-ons," the BBC found, could cost anywhere from GBP 100 to 3000 (Cohen, 2016).

their lower success rates. Even Dr Matsaseng, in a presentation at the SASREG conference, said one could not compare his programme with the private clinics: “That’s like apples and oranges,” he said. Patients in his programme may have to do up to six rounds of IVF to achieve a pregnancy, compared to the average of three in the private sector. More than one clinic staffer I met questioned the premise: Is low-cost even a good thing? According to one embryologist, three rounds of IVF in the private clinics cost approximately the same as a car. “People who have kids should be able to afford this [IVF],” she said. She was asking whether it was a good thing to have “low-cost” IVF because it meant that people with limited means could potentially have children; this was, in her view, a problem. Her comment echoed disturbing eugenicist notions holding that poor or working class people should limit their reproduction, ideas that have circulated in South Africa for a century or more. The reverse of this is that financial well-being, demonstrated in the ability to afford endless IVF cycles and “keep trying,” is seen as a merit for potential parenthood.

Interestingly, several egg donors were among those who repeated the notion that being able to afford — or willing to sacrifice the funds for — IVF demonstrated that one was a good parent. Several donors worried about whether the parents they were donating to were “good” or not, and yet many attributed the burden, especially financial, and sacrifice of the IVF journey as evidence that recipients were potentially “good” parents, particularly mothers. I met Rebecca, an egg donor, early on in my research, and for several months we continued to meet at a local coffee shop, halfway between her office in the city and the central train station. She was selected quickly to donate, only a matter of days after she was cleared to go “online.” At the egg extraction, Rebecca shared that the recipient woman had written a note to her, accompanying a gift of Swiss chocolates, where she had expressed her deep appreciation that Rebecca was going through all of this for her. In her note, the recipient described what made her select Rebecca, and among the reasons mentioned their shared musical interests. Rebecca, like the recipient, had grown up playing many musical instruments, and she promised in her note to teach the child to play piano when it grew. “It was very sweet,” Rebecca said. In her view, the note provided evidence that the intended mother had obviously thought extensively about how to raise the child. To Rebecca, that meant she and her partner would be good parents. Her one concern with donating had been a fear that she would donate her eggs to a family that may be neglectful and abusive. In Rebecca’s mind, the note demonstrated that this was an arduous and expensive journey and a considered one for the recipient mother and that this was a good mother-to-be.

Jessica was a 25-year-old former egg donor living in Centurion, near Pretoria, where she had attended university to study zoology. She had donated on six occasions, beginning when she was 20. Jessica heard about egg donation through a friend. She said she knew she never wanted children of her own, “But I have all these eggs and there are so many women [who] do want children that I might as well [donate].” She also found the compensation helpful in paying her tuition fees to the university and told me she truly enjoyed the feeling of helping, which became “real” when she received a thank-you note from a recipient parent.

> The thing is as well I don’t like it when people have children they can’t afford, you know. The thing is the reason I’m okay with these recipients having kids is that they can afford to go to this treatment, so therefore I know they can afford children. And I know that these kids are going to get the best. They’re going to go to the best schools, they’ll have a decent upbringing, they’re not going to be poor and wanting for anything. In that case, I would not have donated.

Lily, 25, was a friend of Jessica’s, which could account for some of the synchronicities in their logics. She had donated several times, which contributed to five births. She described how she worried about “overpopulation,” but rationalized how her donation did not contribute to that.

> And also — like this sounds strange if you consider the fact that I have technically produced five children — but I have a big problem with overpopulation. I feel like it’s a really under spoken about issue. I feel like nobody really thinks about the fact that we are incredibly overpopulated. We are going to run out of resources shortly, and it’s something that everybody just kind of tiptoes around . . . So that’s a big reason why I wouldn’t have kids. I would really feel guilty about having kids. And then it sounds weird because I've actually contributed to multiple births and children being created. I guess the way that I make peace with it is those

> people the people that need the eggs are not the type of people to have six kids each. They're the type of people that will have one or two because they're already having trouble and it's very expensive to have one or two for them. So I'm assuming that they're not the type of people that are contributing much to overpopulation. And not only that, at least these kids that they are having are going to have good lives. You have to have a certain amount of money to afford children so I feel like if you can afford the treatment then your child will grow up, they're going to be well educated. It's going to probably be an asset to the population as opposed to just sucking the world dry.

Of course, Lily's neo-Malthusian view overlooks the fact that the greatest contributors to the problem of resource scarcity and overconsumption are not those living with many children in developing countries, but instead those in industrialised nations who have one or two (i.e. similar to the recipients to whom she donated her eggs) (Rajeswar, 2000). The ideas related to which recipient can or will be a "good parent" based upon their perceived economic standing (whereby the ability to pay for IVF becomes a proxy for class) sediments attitudes within the clinic about who is seen as having legitimate access to status as a potential "good parent" and thereby *should* have access to IVF. Put differently, it suggests that being poor means one cannot possibly be the "right kind" of parent. These clearly classist ideas, tethered to racialised political economies in South Africa, whereby race and class are indelibly intertwined in imaginaries, reveals the ways that technologies emerge and reflect particular histories and settings.

Donors doing good or doing it for the money

While "suffering mother" tropes normalized the IVF experience for aspiring mothers, donors' subjectivities as moral figures was decidedly different — and decidedly not taken for granted. The dualism of the gift/exchange frames the discussion of the donor's moral status. Some patients and clinic staff disparaged donors, saying that they were simply "doing it for the money," which was an apparent moral failing. In interviews with donors, I found a much more complicated picture of donor motivations and biography.

· 19h

We are proud of our many egg donors who's genuine reason for donating is to help others, rather than for monetary compensation. More on how compensation works here -

Egg Donor Compensation & Payments South Africa...

All our egg donors will receive the allowed payment for donating their eggs in order to compensate them for their time, effort and commitment.

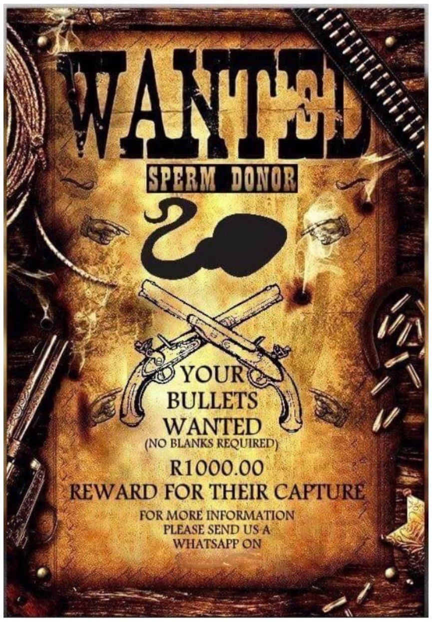
Figure 14. This is a Twitter advertisement for a local egg donor agency. The woman in the image, ostensibly a donor, is dressed as an angel, reflecting the sought-after depiction of donors as "good girls" (see also Pande & Moll, 2018).

SASREG guidelines on gamete donation stipulate that advertisements for recruiting gamete donors should not make statements about "earning money" or "financial gain" but approves mention of "compensation" (SASRSS, 2008) for the time of donation, lost wages, and transportation costs (Jordaan, 2016). The National Health Act legislates as an offence the sale or trade of gametes and receiving any reward or payment another than compensation for costs incurred in the process of donation (National Health Act, No 65 of 2002). SASREG has set the compensation rate of ZAR7000 for egg donors, and considers that amount sufficient to cover the costs of making the donation. Less regulated is compensation for sperm donors, who receive (in the clinics I observed) anywhere between ZAR1000 per donation to ZAR7000 for donations of up to 100 straws.[105]

Gamete donation, particularly egg donation, is overwhelmed with discourses of altruism and giving. The visual messaging is gendered.

---

[105] Straws are the materials that hold frozen sperm samples. Sperm is sold per straw to those seeking sperm donors. How many donations it takes to fill 100 straws varies depending on the donor, the quality of the sperm, and the volume per donation.



WANTED

SPERM DONOR

YOUR
BULLETS
WANTED
(NO BLANKS REQUIRED)

R1000.00
REWARD FOR THEIR CAPTURE

FOR MORE INFORMATION
PLEASE SEND US A
WHATSAPP ON

Figure 15. This is a Facebook advertisement from a local sperm bank.

EGG DONORS

Egg Donors Needed

YOU CAN MAKE DREAMS COMETRUE !

Want to be an Egg donor?

Are you between 20-30 years of age
healthy,
with a normal weight with a BMI under 28.
and willing to help?
Then **YOU** are perfect!

The process is safe and rewarding
We at Sunshine will support you every step of the way.
In return you are well compensated for your time.
R7000.00 per donation

For more info, contact us on

tos/a.248209938607303.58

Figure 16. This is a paper flyer from a local agency advertising for egg donors.

In the advertisements (Figures 15 and 16), one can clearly see the gendered dimensions reflected in the images, words and framings used by local brokers searching for donors. Male sperm donors (Figure 15) are called upon via their masculinity. Images of guns, a "wild west" aesthetic, asking for "your bullets (no blanks)" recalls hyper masculine images of cowboys and mavericks. The comparison of bullets and sperm reflects the conflation of virility with masculinity. The compensation is listed clearly as R1000 for "their [sperm] capture," repeating the "wild west" theme. In comparison, the egg donor imagery (Figure 16) is markedly traditional and feminine. Adorned with pink flowers and rainbows, the advertisement asks if "you can make dreams come true!" in reference to the dreams of the recipient; the reason to donate is for their [recipients] dreams, less your [a donor's] own. Furthermore, because of the intensive screening process for donors, unsurprisingly there is additional information provided about the characteristics required: Donors had to be between 20-30 years of age, healthy, a "normal weight," and "willing to help." The advert describes the process as both "safe" and "rewarding." While rewarding is perhaps reflective of the social and moral value of donating, the advertisement also references the compensation of ZAR7000 per donation.

Gamete donation is but one form of what Nancy Scheper-Hughes describes as bodily "commodification, encompassing all capitalised economic relations between humans in which human bodies are the token of economic exchanges that are often masked as something else — love, altruism, pleasure, kindness" (2002:2). Many scholars contend that the affective language of gamete donation (indeed even the word "donation" itself) conceals the reality that these are economic exchanges Whittaker & Speier, 2010; Jain, 2013). Jain writes against the dichotomizing of gift/commodity in egg donation:

> This false distinction between gifting and commerce, common also in organ exchange debates, confuses a critical point. Even when the gamete is freely given, doctors, nurses, moneylenders, accountants, pharmaceutical companies, lawyers, and many others profit from commercialized, for-profit IVF. Donation is anything but a "wonderful gift," regardless of a donor's intent and even if the donor herself never sees a penny, because it takes place within an already commercialized ethos (2013:137).

That is, regardless of whether or not donors get "paid," and even if their motivations are "altruistic" (a debate that emerges in feminist academia, among bio-ethicists, and within the public sphere), Jain argues that donor eggs can never be "gifts" because they are already embedded within capitalist value systems and commercial settings.

The gatekeepers, that is the embryologists, fertility specialists, psychologists, and agency professions who recruit and screen donors, often receive the donor's claims to doing good and being good with suspicion. Despite the advertisements and claims to altruism, some gatekeepers accused donors of lying, manipulating their applications, or giving answers that they believed would secure their acceptance, on their application forms. Debra, an embryologist who handled many of the sperm donors, suspected as much: "They [donors] could lie on the questionnaire for all we know. And I think, if I was going to be a donor and know that I'm going to get money, and that's what I'm in it for, I'm going to lie on the questionnaire to myself look good." Another physician accused a donor of lying about her Matric certificate and refused to accept her as a donor. Matric certification, received when one has passed their final year of high school, was among the requirements of many clinics and agencies (more on this in the next chapter), and reflected the assumption that linked intelligence with genetic contribution and the capitalist logics that required donors have marketable attributes (see Fox, 2008; Payne, 2014). Both Debra and the physician believed the motivation to acquire the ZAR7000 compensation contributed to donors lying in their applications. The implications were, again, gendered. While both men and women donors were at times accused of lying, it was only deemed a problem when women lied. Many in the clinic that dealt with sperm donors expected that they lied and did not seem bothered by it. In contrast, the egg donor that lied was rejected.

Though less frequent, patients also had strong opinions about donors and their motivations. Melinda, 41, was an attorney going through IVF. She had two children already, from a previous marriage, and sought a third with a new husband. In our interview about her experiences, the question of donors and their motivations came up.

> **Melinda**: I want to know why. Well, they [donors] are probably going to say the money. Well, they say, well we just want to make some sort of lady that can't have children happy. Oh, crap man! Oh, that nonsense. It's a lot of crap.
> **Tessa**: Yeah. I don't know yeah . . . I do suspect the money a lot.
> **Melinda**: I don't suspect any other reason but the money.
> **Tessa**: I think maybe it's different [between egg and sperm donors], for those who donate eggs, than the money.
> **Melinda**: Why?
> **Tessa**: Hmm . . .
> **Melinda**: It's supposed to be even worse for them because they've got that maternal instinct for keeping your children safe and together. It would be even worse for me.
> **Tessa**: So, there must be . . . That's what I mean. There must be another reason.
> **Melinda**: But then it must be for the money. You're so desperate . . .
> **Tessa**: But it's not even that much. 6000[106] rand.
> **Melinda**: Well if you do it for the money, 6000 rand is a lot of money.
> **Tessa**: Yeah, I don't know, I'll . . .
> **Melinda**: Would you donate your eggs?
> **Tessa**: (shakes head no[107])
> **Melinda**: Yeah because 6000 is not that much to you probably.

One can see that I (Tessa) articulated a gendered argument for why women donating eggs might have greater altruistic motivations than sperm donors. Clearly, these gendered notions of morality and altruism and why donors participate are deeply ingrained, even in this researcher. Melinda did not agree though. That women, who have a "maternal instinct" for children, participated in IVF that way made, their donation even more egregious, in her view.

---

[106] At the time, the donor payment was ZAR6000, and this changed to ZAR7000 about halfway through my fieldwork. The increase was explained in terms of increased costs of living, such as petrol costs, that would thus require more money to compensate donors.

[107] Here, I'll step back for a moment to reflect on the question of whether I would donate. It was not the first time I was asked to donate. Indeed, when discussing with an egg donor agency how participant observation worked and what I wanted to do, they asked if I wanted to donate; that is to "participate" in the fullest way possible and be an egg donor. At the time I was in my early 30s, still within the 18-34 range that is usually accepted for egg donation. However, I had just read Lochlann Jain's (2013) deconstruction of the egg donor market and the lack of long-term research on the effects of donation: Is there a link to breast cancer? Jain provides a compelling account describing why there may be a link, and more so, why there is appears to be no clear understanding of the issues (2013:128-150). So no, I would not donate. My decision is a risk calculation, and is not outside of the economic calculus.

In contrast to the scenario of donors being either purely altruistic or purely motivated by money, the data I found on egg donors show a much more complicated picture. Rebecca, whom I introduced before, expressed her interest in terms of egg donation being simply another way to help. She often volunteered, donated blood, and was listed as an organ donor, so why not donate eggs? However, she also reflected that she needed the ZAR 7000 to help with her tuition as she was studying at the University of South Africa towards a degree in linguistics.

I met Amy, also a student, during her screening. In addition to other medical and legislated criteria, a range of "soft" characteristics were ascertained that made donors "fit" to participate. The psychologists I spoke with said this focused primarily on assessing that donors were "responsible" (Would the donors come to all their scheduled appointments and inject medication at the right time?). They also sought to see if donors were enthusiastic and altruistic, asking them about their motivations to donate, whether they wanted to know the potential child in any way, or how they thought about their donation. Amy, 24, was the only donor that listed money as her first motivation when asked. Of course, she said immediately, it was for her tuition. And she wanted to help; her mother had been infertile, and she was adopted. I met with Amy the following week. Amy's mom, who had been infertile (and thus adopted her) was at first against Amy donating. She said she believed it to be akin to selling body parts. Amy had two friends who had donated already, and this likely contributed to normalising the process in her mind. She also suddenly switched her degree, from biology to law, and thus required extra years at university and of course, extra fees. The fees finally pushed her to donate. I asked her more about her reasons for donating, and pointed out that she was the only donor I had met who openly described money as a motivating factor. She responded:

> I feel like everyone maybe isn't saying but it is the reason, I feel like it's a lot of money and it's definitely a motivating factor. You don't just go through this . . . Unless it was a friend of mine, I wouldn't go through this for nothing . . . giving yourself injections every day. It's not . . . pleasant.

Amy believed that the money was motivating almost everyone; yet everyone performed as if primarily motivated by altruism, concealing the financial impetus for donating. Indeed, other studies have shown how gamete donation is a field for the production of altruism (Almeling, 2006). Textual artefacts like donor applications and discussions with clinic staff, psychologists, and agency brokers become fields for donors to perform altruism in a way that shapes their motivations to fit the gendered norms. Other research in sperm donation in Denmark (Mohr, 2014) and egg donation in New Zealand (Shaw, 2007), similarly reflects on motivations as a gendered performance of moral altruism.

Students like Amy and Rebecca were sought after by donor agencies. They were young (meaning their oocytes likely had the greatest reproductive capacity), had flexible schedules (meaning they could fit appointments and scans in amid university lectures), and they needed money. Yet, their need for the money (potentially a moral failing) was reframed as morally upright — they needed money for their studies. However, what surprised me, in contrast to the advertising images of young students, was the number of women that were already mothers themselves who applied to donate their eggs. Their reflections on donation often centred on their own role as mothers. That is, in sum, they wanted to help other women to have children and experience the joy they had at becoming a mother[108].

Natasha, 26, was a massage therapist. She had last donated when she was in between jobs, after being retrenched from her position at a gym, and needed money while she sought permanent work. I met her during her psychological screening, and immediately her motivations for donating centred on her daughter. She explained that she wanted to donate to help another woman feel the love that she felt on becoming a mother. Andrea, 33, also had two children. When asked why she wanted to donate, she said, "I just know that I would hate it if . . . my children are my life. I have all these eggs going to waste and there are families who can't have what I have with my children." Jaci, 32, was

---

[108] One also cannot discount what the financial input of ZAR 7000 could do towards helping take care of an already existing family and/or children.

wrangling her two-year-old just after her egg aspiration when we met. She had found out about egg donation online through Facebook. She too said she wanted to donate "to help somebody else experience the joy."

I include these narratives of donor motivations to add nuance to the discussion of donor subjectivities as it often gets corralled into "good" and "bad" reasons to donate that reflected gendered norms of morality.

Conclusion

What does a moral landscape do? Svendsen and Koch (2008) argue that the moral pathfinding of physicians facilitates the making of "spare embryos," which in turn provide a needed resource for stem cell research. This echoes Elizabeth Roberts' (2008) argument in relation to Ecuador where the US ideology of relating to embryos through an ethic of life facilitates their circulation through embryo adoption programmes; that is, if embryos are related to via an ethic of kin (potential family), as in Ecuador, then embryo circulation is limited or precluded because freezing and mobility would be like abandonment of family. Thus, these authors find that moral and ethical arrangements do certain kinds of work in fertility clinics and the larger networks — research, commercial — in which they are embedded. Moral landscapes, in sum, can provide pathways for the normalization of potentially meaning threatening technologies.

The focus on moral landscapes illuminates how certain discourses and boundary-making practices work to domesticate this type of landscape. This differs slightly from the depictions of pathfinding into new terrains, as described by other engagements with novel biomedical technologies (Rapp, 1999; Svendsen & Koch, 2008). Scholars have argued that IVF has largely become normalized in South Africa (Namberger, 2017) and in other contexts (Franklin, 2013). However, there is still a maintenance at work, the work of continued domestication, and cultivation (if I may extend the landscape metaphor), that becomes reflected in the continuing discursive work of stabilizing the clinic as a "nice place," and the patients, particularly women, as "good," alongside potentiality meaning threatening elements of pain, disorder and money. Focusing on moral landscapes, I argue, reveals how moral discourses, ideas of "good motherhood," altruism, and capitalist logics conspire to shape certain futures. The production of a clinic ethnos that I can simply describe as a kind of "niceness," serves to foster the kind of family formation rhetoric (Deomampo 2019). That is, a focus on the "nice" clinic (in contrast to the unruly and disorderly outside) where "good" people engage in a process to make (certain kinds of) families dissuades not only a critique of the larger context, but further veils the for-profit and commercial ethos in which IVF and gamete donation take place (see also Jain 2013). The way the process acts as a platform for a performance of "good motherhood" similarly ignores the racial and class imaginaries and histories of those distinctions. Finally, the focus on the pains of sacrifice through money and needles, where performances of goodness materialize, similarly veils other kinds of sacrifice and pain —the potential long-term health effects from the drugs injected by these needles and for the health outcomes of children born via IVF. The questions of the long-term health outcomes from IVF, for children, parents, and donors, is a controversial one and also unsettled by the prevailing scientific literature (Hansen et al. 2002; Gennari et al. 2015; Schneider et al. 2017; Gilboa et al. 2019; Lundberg et al. 2019; Hargreave et al. 2019).

Thus, while potentiality "name and frames," it can simultaneously veil, conceal, and obscure, a characteristic of the concept that has been less noted. I think of this as the "scoping" of potentiality; that is how setting up of particular moments (the temporality of epigenetic interventions (Lock 2012)), of particular bodies (foetal bodies over pregnant women (Valdez 2018)), or scopes of what constitutes "safe" (injections as a minor harm to get over, while negating the potential implications of the drugs that are injected (Jain 2013)) can both instantiate a moral (and, as we have learned in Section 1, a profitable) impetus to intervene, while allow for the neglect to other bodies, forms of life, and futures.

The management of potentiality, in this case the capacity for its threat to certain moral orders of gender, motherhood, and family, and how this serves to reproduce certain normative regimes, is a recurrent theme in this section of chapters. In this chapter, we havThe next chapter continues this idea, looking at the ways that choices about donor gametes reproduce modes of racialization.

Chapter Six:

Making a match: Curating race in gamete donation

On a March morning in 2016, I sat in a rolling office chair next to Riana looking at an Excel spread sheet on her computer. As an embryologist, one could imagine that most of Riana's day was spent in the lab doing the delicate work of bringing sperm and egg together *in vitro*. Yet, on this instance, she sat with a list of a dozen sperm donors and was tasked with "matching" — finding a suitable donor for a couple in need of a third party to provide one set of the gametes (sex cells) to fulfil their desire for having a child.

Literature within the larger scope of gamete donation has focused on how recipient couples choose donors (Jones, 2005; Wong, 2017), particularly via articulations of race, and its connection with nation, kinship, and desirability (Thompson, 2005, 2009; Nahman, 2006; Quiroga, 2007; Kroløkke, 2014; Payne, 2014; Deomampo, 2016a; Schuur, 2016). Many have tracked the global desirability of certain donor attributes, such as race, class markers, education, and national identity – or what Jenny Gunnarsson Payne (2014) refers to as objects of "biodesirability" — that have fuelled the flows of reproductive travellers, that is, fertility patients travelling overseas in search of services and cells (Whittaker & Speier, 2010; Gurtin & Inhorn, 2011; Inhorn, 2015; Nahman, 2016; Speier, 2016; Homanen, 2018) A subset of the literature has explored how reproductive technologies and services have become sites of racialization, enacting race and kinship as visible markers of relatedness and structuring relations (Ariza, 2015; Bergmann, 2015; Deomampo, 2016a; Homanen, 2018).

To explore donor matching in IVF, I draw from recent work within science and technology studies on materializing race, such as Amade M'Charek's (2013) work, which examines how race is "done," that is, the various relations linked with race that stabilize and enact it. In this formulation, I do not assume that race is given, and instead am interested in how it comes to be and to be stabilized. Stability is precarious work, and what is at stake in South African matching is the fear that it be done improperly. Various elements — donor biography, and photographs, for instance — come together to produce something, not only children and parents, but also reproducing race, ethnicity, nationality, and kinship (Thompson, 2005, 2009; Nahman, 2006; Ariza, 2015, Bergmann, 2015; Homanen, 2018;). Further, "ontological choreography" highlights that these elements must do so in a way that is legible and seen as legitimate. In this vein, I argue that "matching" reproduces race, and specifically a particular kind of whiteness.

I am placing this literature into conversation with the question of "choice," and the role of gatekeepers, or "matchers" in this context. I use the term matchers to describe the various professionals who curate information between recipients and donors for the purposes of asserting suitability. "Matching" is not a job description; in different clinics a range of personnel, such as psychologists, medical doctors, nursing sisters, embryologists, IVF coordinators, and donor egg agency staff, worked with recipients, sorting technologies, and donor information to reinforce "a good fit."

Race is enacted through what I describe as "curature," that is matchers' curatorial practices of racial classification and sorting of donor information. Drawing on the archival and art curatorship work of Hamilton and Skotnes (2014), I adopt and reframe their concept of "curature" to describe how matchers manage — highlight, mollify, and sort — fragments of donor information with recipients' desires, to thus craft whole narratives of racialized kinship, folding various elements of social life within a notion of inheritable and biologized race, and assuaging anxieties of unknowable genealogies. Through modes of "knowing race" and knowing donors, matchers draw lines of similarities and differences, purporting matchability between donor and recipient. Curature parallels how archives and classification systems, including racial classification, involve both knowing and forgetting, and clear filiations or impressive torques between persons and the category (Bowker & Star, 2000). I am suggesting curature as a way to capture the relational conditions and forms of power that render certain "choices" legitimate and legible. I argue that the careful work of matchers and the assembling of racialization that they contribute to reveals the inherent instability of race and how processes and technologies such as IVF are potentially threatening to this order. Among the potentialities of IVF are how systems of normalization could be doing things differently; when it comes to race, how IVF is *done* contributes to reproducing these very systems. I theorize "curature" as a way to think through the role of powerful mediating actors in facilitating and managing sites of potential, suggesting a new lens through which to grapple with notions of "choice" in the context of an ever-increasing neo-liberalisation of healthcare and the commodification of reproduction.

Whiteness

A history of racialisation

> Arrangements of race that seeped through the everyday and stained (Erasmus, 2017:17)

How the state came to "know" and categorize an individual's race has been the subject of a substantial body of scholarly work (Dubow, 1995; Bowker & Star, 2000:195-225; Posel, 2001; Erasmus & Ellison, 2008; Erasmus, 2017). As a result of the histories of racialization in South Africa, many people came to self-identify in ways that harmonized with official assessments. Yet, there were numerous "in between" cases where state officials stepped in (Bowker & Star, 2000), in addition to the quotidian ways that racialized bodies were read in everyday life. To quote Kathleen McDougall (2013), "Every encounter had the shocking potential as a mise-en-scène for the performance of racial hierarchy." In practice, as Zimitri Erasmus (2017) describes, appearance was a primary method of "knowing" race; but it was not enough to ensure one's place within categories. Instead, classification was a "dynamic process, situationally dependent on routine judgments of class, social standing, and culture. . . . An 'on-the-ground,' 'do it yourself' practice" (Erasmus, 2017:89). For instance, those who "looked" coloured, one of the four racial categories at the time, also had to "act" coloured — exhibit language, religion, social class, traditions, and employment that corresponded to the state's (i.e. white officials') understanding of coloured life. These bio-cultural assemblages stabilized determinations of race categories (Klausen, 2001; Posel, 2001; Erasmus, 2017). Thus, while the globalizing discourse of "race science" and belief in a biological basis of race influenced the architects of apartheid, culture too was understood as a powerful axis of difference. This contrasted with the notions of blood and ancestry of the "one-drop rule" (Davis, 1991) in the United States.

Guarding the borders of race was a fraught process especially when determining what constituted "white" and protecting its mythical purity. This was despite of — or perhaps directly because of — the open secret that many in the white population had "mixed" ancestry (Bowker & Star, 2000:208; Breckenridge, 2014). Contributing to this was the historical antagonism between English and Afrikaans-speaking peoples, who were grouped together as white. Tiffany Willoughby-Herard (2007) argues that the 1932 Carnegie study on "poor whites," a powerful motivator for apartheid segregation policy, warned of both the potential vulnerability of white civilization — thus revealing the fallacy of a "natural" white supremacy — and its potential rehabilitation, rendering whiteness hyper-visible (2007:485). Anti-poverty measures included spiritual and moral rehabilitation in the conservative Afrikaner or Dutch Reformed Church, the *Nederduitse Gereformeerde Kerk* (NGK), in addition to education, birth control promotion, and home training for young women (Seekings, 2007). While undoubtedly focused on economic "upliftment", the anxiety and fear of an internal moral rot threatening the white civilization brought about measures within the church to purify the soul, with surveillance on sexuality part of the effort to assure the reproduction of white purity. Susanne Klausen argues that the latter was fundamental to the maintenance of the apartheid state (2010:41; see also Steyn, 2001:20). The apartheid policies of a colour bar for employment, demarcated living areas, and the prohibition of cross racial marriage were intended to bolster white economic power *and* to prevent "racial mixing," maintaining the so-called "racial purity" of whites in particular. "The *policing of the borders of whiteness among whites* was a critical terrain on which to map South Africa's racial hierarchy," Willoughby-Herard argues (2007:493, italics in original). Anxieties about the moral degradation of the white population (Falkof, 2016), and heightened fears of racial impurity led to the sexual surveillance of white women (Klausen, 2010), responses that in turn fed the unease of white people fully aware of their minority population status in South Africa, unlike other settler colonies (Steyn 2001:25). The transition to democracy in the 1990s has seen large parts of the minority white population maintaining and rearticulating its privilege in the "New South Africa," while the formerly disenfranchised, dispossessed, and majority black population has achieved political power (Steyn & Foster, 2008).

Today, race and racialized thinking remain a part of the everyday epistemologies of South Africans, in ways both regressive, such as in the enduring tenacity of racist thought, and progressive, as in ways to track social progress (Erasmus, 2017). While no longer employing official classification measures, the historical context provides a set of epistemologies that guide and frame social life. While I have provided only a brief sketch of the history of racialization, particularly that of whiteness in South Africa, it points to the way reproduction was a site of powerful racist imaginaries and anxieties, and of state intervention. I argue that the process of donor matching reproduces whiteness, albeit a distinct kind of South African, settler-colonial, whiteness.

Whiteness in South Africa

> It is longing . . . it is dread. (Crapanzano, 1985:46)

In *Waiting*, the monograph by American anthropologist Vincent Crapanzano (1985), he writes that the whites of Wyndal, the pseudonym for a small winelands town near Cape Town, were in a state of temporal paralysis. Facing, for them, a problematic and insecure future, whites were caught within nostalgic cycles, fearing the future, anxious for its outcomes, rehearsing the expected reckoning, and at the same time longing for a past. It is an unflinching and rather pitying look at white life in South Africa and detailed in its accounts of racist rhetoric. Its appearance led to controversy and critique from fellow anthropologists, particularly South African ones, some of whom accused Crapanzano of alleviating white American guilt by pointing out the racisms of others (Scheper-Hughes, 2007:184). Others critiqued his attempts to make the town and its people anonymous, his fieldwork ethics, and the over-generalisations drawn of South African whites (Boonzaier et al., 1985). However, Crapanzano's book remained one of the few early attempts at what he referred to as a study of domination through looking at those who dominate, particularly in the colonised world.

Sociologist Melissa Steyn has undoubtedly provided the most in-depth and long-term engagement with whiteness studies in post-apartheid South Africa. Her first book, *Whiteness just isn't what it used to be*, looked at five narratives deployed by whites in framing their subjectivity. These include: 1. As leaders of humanity, 2. As victims of the current political system, 3. As leaning into privileges to succeed in the new context, 4. As "colour-blind," and finally, 5. As a hybridisation and actively refashioning. Steyn's further study of South African "White Talk" (2004; Steyn & Foster, 2008) explores the white discursive modes of asserting privilege in the "New South Africa." Maintaining "White Talk" allows for whites:

> to underplay the dominance of their whiteness in the larger scheme of past and present global arrangements, and are able to 'hook' that power through racial solidarity, sympathy and Afropessimism abroad. White South Africans can reach out to their racial kin in the white mainlands through the ideological allegiances of whiteness, affiliations which are taking on new levels of importance as whites deal with loss of political dominance in the local context" (Steyn & Foster, 2008:46).

Similar discursive tactics were described by Salusbury and Foster (2004) in their research on WESSAs, otherwise known as White English-speaking South Africans. While Afrikaans-speaking whites have at times been the subject of research on whiteness in South Africa, English-speaking whites have been invisibilized, a situation that the authors attribute to their encompassing a diverse ethnic composition, leading some to question as to whether they can be considered "a group" at all (2004:93). People with backgrounds such English, Jewish, German, Portuguese, and Greek may come under the banner of "English-speaking whites." This includes my own family: One side Jewish, and the other German-Scottish. My parents were / are "English-speaking whites," a group that the authors contend exists "if for no other reason than that it has meaning in the South African experience" (Salusbury & Foster, 2004:93). Yet, another reasons for the lack of scholarly interest in the group has been WESSA's lack of interest in identifying cohesively and instead adhering to individualism and connections to former colonial states, especially to Britain. The authors findings point to alignments with studies in the United States and the UK, where WESSAs, in contrast with white Afrikaners, speak of themselves in modes of "culturelessness" and "cultural normativeness;" that is, as if they had no culture, or that their culture was merely the norm (2004:96-97). Instead of seeing themselves as belonging within a culture, and obliged to that culture, WESSAs viewed themselves as individuals, with individual choices, in contrast to their fellow South Africans who are obliged — and held back — by their cultural attributes. While whites have become politically denuded, economically they remain advantaged. This in turn has shaped post-apartheid white discourse that frames whiteness as "naturally middle class" (2004:100). Most significantly for this study, Salusbury and Foster link WESSA narratives to contradictory forces within globalisation, where the authors point out that whiteness studies are often critiqued as the "ultimate triumph of European colonialism" (2004:104). Their interviewees navigate the paradoxes of globalisation; on one hand, they are sure to adhere to South African nationalism and justify their presence here, yet they also highlight their historical origins in Europe and Eurocentric ideals. This allows them to position themselves as "civilising forces" from within. The authors conclude that "WESSAs may 'tap into' a transnational culture of 'whiteness,' allowing them to masquerade as cultureless, but also permitting the group to legitimise their ideological stance through the invocation of 'internationalism'" (2004:108). This choreography of insider and outside allows them to remain politically concealed while socially hegemonic.

The unique starting point of whiteness studies in South Africa, as several authors (Steyn, 2001; Salusbury & Foster, 2004) have noted, is its self-conscious fashioning amid minority numbers. Unlike other contexts where whiteness studies have taken root, such as in the United States and the UK, or other settler colonial contexts, such as in Canada, Australia, or New Zealand, whites in South Africa were always a distinct numeral minority. Never exceeding more than 20 per cent of the population, whites in South Africa today comprise 9 per cent of the population. As such, "whiteness" in South Africa differs from Western contexts in that it is more obvious in its potency and privilege: "Self-conscious rather than deliberately obscured, and accepted rather than veiled as a sight of privilege" (Salusbury & Foster, 2004:93). That is, unlike whiteness studies that seek to highlight invisible, unmarked whiteness (Frankenberg, 1997), South African whiteness is in contrast "hyper visible" (Willoughby-Herard, 2007).

The second unique aspect of whiteness studies in South Africa is temporality. In Crapanzano's (1985) depiction of Wyndal, for instance, the past was filled with nostalgic longing; it was the future that could evoke anxiety, fear, trepidation, and thus the emphasis on waiting. Post-apartheid, the past is shameful. As Kathleen McDougall (2013) has carefully tracked in her work on Afrikaner genealogies, what was once "just living," the minutia of everyday life, has suddenly become possibly political, tainted by the shameful apartheid past. The shameful past, argues Christi van der Westhuizen (2017), structures the moral posturing of white Afrikaans women. Finally, the third point to highlight are the parallels with globalisation in that whiteness in South Africa is in on one hand claimed as deeply local, asserting ties to the country and the right to reside here, while on the other, constantly emphasizing global ties and linkages (Salusbury & Foster, 2004; Steyn & Foster, 2008).

The histories of South African whiteness and the particularities of its formation and maintenance of privilege, I argue, find their way into the processes by which donor matching takes place. The visibility, temporality, and assertions of globality that are characteristics of South African whiteness are reproduced through the practices of donor matching. These characteristics come through most evidentially in the screening practices for donors and the way the local industry views the markets for the eggs of white women.

Screening for "quality donors"

Not surprisingly, in the last few years, online recruitment of donors has increased, with the inauguration of targeted Facebook ads and Google search advertisements. Agencies also post notices on university campuses or in university newspapers. Word-of-mouth or recruitment through friends has the highest follow through rate; those who have already donated can often earn an extra cash bonus for bringing a friend who also becomes a donor. Several clinic and agency staff I worked with said they would approach attractive young women they met at cafés or restaurants and encourage them to donate. Thus, donors typically come from such strata of South African society -— university students, those that socialize in the same areas as recruiters, or have friends that have successfully donated. These practices indicate early on that recruitment and screening are tied to matching and images of potential recipients, as social lives remain segregated.

Those who apply must meet certain age, medical, psychological, and educational criteria, Donors must have functioning and healthy reproductive systems;[109] egg donors had to be at least 18 years of age, though in some cases 21, and younger than 34, and in some cases 32, depending on the clinic or agency (SASREG, 2008). Those with genetically linked illnesses, or those with diagnosed bipolar disorder or schizophrenia, or with a family history of such were often rejected. The psychologists I spoke with said they evaluated the donor's psychological state, verified family mental illness, and evaluated that they had right aptitude to donate. Psychological screenings flagged donors for possible drug[110] and alcohol use, coming late to their appointments, exhibiting "attachment" to eggs, or the potential to lie on their forms.

Here, Claire, a matcher from an egg donor agency, spoke about recruiting donors:

> **Claire**: I won't just approach anyone on a street corner and ask them if they would do this. We expect them to have Matric or close to Matric. But if I speak to them — that they understand English properly and can be understood. I do get quite a lot of people that are contacting me; they've seen an ad in the student newspaper, but they're not necessarily students. But they've got a lot of children, they're out of work, often they're really overweight, and that's a huge problem I find 'cos the BMI is important and I try to stick to it.

Later, Claire told me about an occasion where a donor she had recruited — a waitress who had served her at a restaurant — had brought along a friend who wanted to donate. But Claire found the friend "unsuitable:"

> Claire: But that girl, I would flag her. She's not going to be a candidate even afterwards.
> Tessa: Why's that?
> Claire: 'Cos I could see that she didn't seem to understand. She was speaking in her own language to them. She didn't seem very educated or . . . that's what I meant when I said quality: People who have a reasonable level of intelligence. I won't recruit a domestic worker. I think

---

[109] In the case of sperm donors, this includes specific parameters in a semen analysis. In the case of egg donors, donors had their blood tested for hormone levels, sexually transmitted diseases, and had a vaginal ultrasound for a visual screening of their ovaries.

[110] At the time of my research there was an internal debate among psychologists who screen egg donors about whether occasional marijuana usage was a legitimate reason to refuse a donor.

> about what kind of person would I want. And try and keep certain standards that if you come to me that person will be quite intelligent.

For Claire, not speaking English "properly," a lack of formal education, or having a job such as a "domestic worker" would render a person as unsuitable to donate. Claire's words exhibit what I observed in the way that agencies and clinics recruit and screen donors against criteria that reiterate social hierarchies, particularly along class lines. All the agencies and clinics in my research required that donors have at least a Matric certificate (i.e. proof of graduating from high school), and some required that donors have some tertiary education. While some 70 per cent of white adults over 26 have completed Matric, this is true for only 19 per cent of black adults (Van der Berg, 2007). The reasons offered for this insistence on educational proofs varied. Some agencies and clinics stated that they rejected those without Matric because possession of the certificate confirmed that they would understand the medical process, thus ensuring informed consent. Many also stated that recipients would simply never select donors without Matric, thus the donor would not be selected. This reflects the way that market logics (what donors are sellable?) shapes donor recruitment.

As one doctor explained about their clinic policy: "They [the potential donor] will not be chosen if they haven't got at least Matric. And if they are of low intellect and haven't passed exams, we will never take them. . . . The type of patient that we work with is a university, college-type patient." In this logic, donor's social status (as indexed by education) should equate with recipients (as indexed by their professional status). At least as much as possible — I observed numerous instances of matchers navigating educational attainments of donors (who, by and large, are less educated than patients) through explanations that donors were young, still in university, or nonetheless working hard at a respectable job, among the careful crafting of similarity that characterizes this form of choreography.

The need to earn money, especially when out of work and supporting children, may be a reason why egg donors contact Claire, but those were also reasons why Claire found them unsuitable as donors. The portrait she paints is heavily racialized, if not racist, discourse. Claire's description of those she refused to accept as donors — unemployed, overweight, with many children and not properly speaking English (one among 11 national languages in South Africa) — reproduce racialized hierarchies along intersections of class and urbanity. Essentially, poverty, which was deeply racialized by colonialism and apartheid, rendered one an "unsuitable" donor.

Markets for whiteness

In addition to the financial appeal, those within the industry describe South Africa's interest as a global destination for reproductive services, particularly donor oocytes, in racial terms. Dr Coetzee, a fertility specialist, explained why he believed South Africa's oocyte "stock" (his term) was sought after:

> Because of the diverse white, what is the South African population. Apart from that we have a huge African population, which we can supply the whole of Africa. . . . [Donors] that come out of the Ciskei and Transkei[111] and so forth. . . . And then you've got the South African makeup, where do they come from? They're Dutch, they're German, they're Italian, they're French. In other words, you've got this wonderful genetic makeup.

Here, the doctor makes several key assertions. Firstly, he equates the white population with the national identity of South African, which he distinguishes from "African" people within the country. Secondly, he purports that the African population of South Africa is similar enough to the "whole of Africa" to be a suitable match. Finally, he distinguishes the specific settler ancestry of the white population who have mixed and convened into this "wonderful genetic makeup." Other industry figures made similar claims: That South Africa was uniquely situated to service discrete racialized

---

[111] Ciskei and Transkei refer to areas in the Eastern Cape that were declared "Bantustans," that is "black homelands," as part of apartheid policy.

markets of white, black and "mixed-race" clients. Many stated that part of the appeal of South Africa's white donors was the "mixed" European ancestry diversifying the white phenotypes and dislocating them from a particular ethnic and geographical background. This was in contrast — and competition — with other areas where white egg donors come from in the global market of reproductive services. For instance, one agency manager described Ukrainian donors as distinctly "Russian-looking" with "hard features." Instead, local operators believed that the market traction of South Africa's white donor population — particularly for Australian recipients, the largest international recipients of South African oocytes — was the shared settler colonial history yielding seemingly place-less whites. "We're quite neutral-looking," said one agency owner. "You know we could be from the States; we could be from the UK; we could be from Australia."

What is "neutral" about South African whiteness? Neutrality could be described as unmarked, unencumbered by geographic and ethnic specificity, remade instead in the context of settler colonialism. I believe this is an important distinction. The kind of whiteness purported in South Africa and claimed as a boon to its international draw in the fertility market, is lacking in ethnicity, geographic specificity, and asserts a globality that is unreachable to other white locales (Spain, Greece, Ukraine) that have markets in white donor oocytes. Such commentary is undoubtedly also part of marketing in an increasingly competitive global market for reproductive travellers. That is, in trying to recruit clients, specifically from places like Australia where there are numerous push factors for reproductive travel, matchers use the corresponding settler colonial history as a selling point. This means that in sharing a history of European colonial settlement, a historical moment whereby differences within Europe gave way to a kind of supranational whiteness in opposition and relation to the colonial Other (Steyn, 2001:5-6), donors and recipients may now share a narrative and mythology of shared lineage, roots, and origins, to recall Donna Haraway's compelling description of race (1997:213). It also alludes to what threatens the notion of a unified, settler whiteness: Ethnic particularities, lack of education, lower socio-economic class, or, in the words of one matcher, those who are not "quality" donors.

The insistence on placeless-ness echoes the claims to universality that whiteness studies have worked to counter through situating whiteness in a particular time and place (Frankenberg, 1997). Locally, several scholars of whiteness studies in South Africa have pointed out that asserting "respectability" has been an important mode of whiteness post-apartheid as democratization compelled new articulations of privilege (Steyn & Foster, 2008; Van der Westhuizen 2017). Yet even in this post-apartheid context, these mindful curations of donor databases draw upon historical anxieties over the status of those suspected of being "just-about-white" (Van der Westhuizen, 2017:4-5) or peripherally white, because of their ethnicity or class. Asserting "quality," highly-educated, and place-less white donors draws from these local histories and repertoires of self-consciously crafted whiteness in South Africa — and avoids what would seemingly threaten it. Asserting this "beautiful European mixture" attempts to enfold South African whites into a discourse of global whiteness.

Infrastructures of matching

I interviewed Susan and Doug, a couple from Australia, over Skype in July 2016. They were planning to come to Cape Town the following month for an IVF cycle with egg donation. They had been married for some years, but Susan struggled to keep her pregnancies. She had had several miscarriages over the years that were attributed to a blood clotting disorder, and by now she was "too old," as she put it. Egg donation was their last chance to fall pregnant. Susan was white and Doug was Indian. I asked them how they went about choosing a donor. "We felt there were just too many to look at," she said. With hundreds of donors on a given database, they had to make some choices. Susan said that since they were a mixed-race couple, the question of race was not highly significant but that in being compelled to siphon choices, they ultimately searched for a "Caucasian" donor. "Even though, in the end, it's not going to look like me anyways," she said. "It's going to look like him."

Some agencies have online databases where potential parents may search, after first selecting search features in drop down menus — Race, Age, Location, Hair Colour, Eye Colour (see Figure 18). While "race" is often listed alongside "Hair Color" and "Eye Color" as yet another category of comparison, race dominates the organization of donor information. This can be most clearly seen in a set of files I encountered early in my fieldwork. The files, filled with the profiles of sperm donors, were labeled White, Coloured and Black/Other, where "Other" referred to East Asian or South Asian donors. Files make clear two fundamental elements of the categories that shape the relationship of race and donor profile. Firstly, these categories are mutually exclusive (Bowker & Star, 2000:10). A donor profile cannot be in more than one files. Secondly, one has to decide race before any other characteristic. This makes it impossible to conceive of searching for donors by any means other than race.

Agency and clinic staffers told me of their efforts to recruit donors from specific racial groups. One agency posted online advertisements for "Indian" and "Asian" donors. The chart in Figure 17 shows the racial demography of four egg donor agency databases. The databases offered different labels for racial groups, but these continue to correspond to apartheid-era categories. Two other agency professionals estimated the number and racial make-up of their donor cohort. One, which facilitated about 85 donations a year, stated that it did not accept donors from places like Khayelitsha, the largest township in the Western Cape almost exclusively comprised of black residents. The second said its database was comprised almost exclusively of black donors, but initiated a discussion with me on strategies to successfully recruit white donors. I visited three sperm banks where white donors far outnumbered other racial categories.

Agency	"White" or "Caucasian"	"Coloured", "Colored" or "Mixed"	"Black " or "African"	"Indian"	"Asian" or "Oriental"
A	85	51	206	5	0
B	201	43	179	20	0
C	90	64	188	3	NA
D	39	18	28	5	0

Figure 17. Demographics from four donor agencies that have online databases. Retrieved January 2019.

Agencies and clinics collected most of the information on donors via their application form, ranging from 10-20 pages. This constituted both the first step of screening and the information that comprised the donor profile, which would be emailed to potential receipts, shared on online databases, and included in donor files. The application included questions on personal information (race and age, among others); looks (hair color and texture, complexion, eye color — see Figure 19); medical history; detailed family medical history; professional and educational background (including that of family members); and "personality" questions.

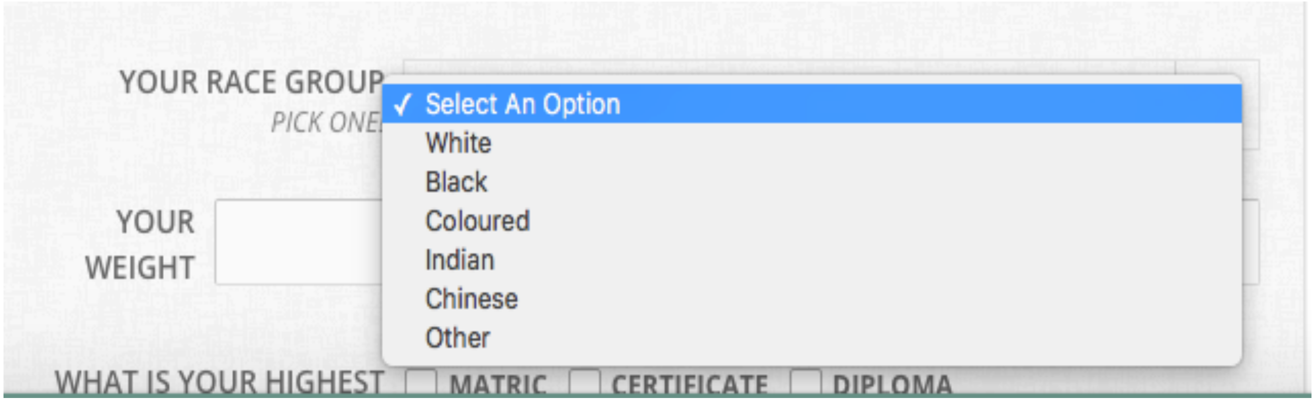
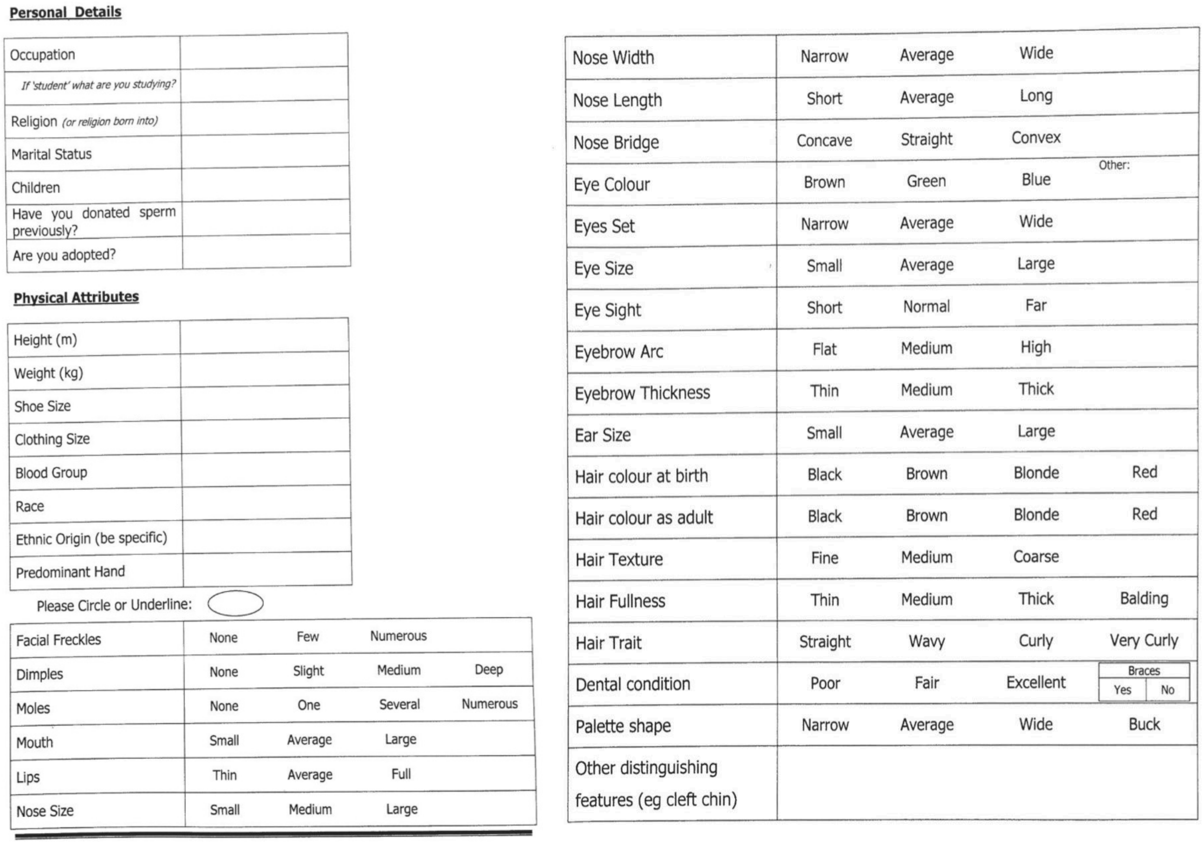


Figure 18. Options for race group from an online application form for potential donors.



Personal Details

Occupation	
If 'student' what are you studying?	
Religion *(or religion born into)*	
Marital Status	
Children	
Have you donated sperm previously?	
Are you adopted?	

Physical Attributes

Height (m)	
Weight (kg)	
Shoe Size	
Clothing Size	
Blood Group	
Race	
Ethnic Origin (be specific)	
Predominant Hand	

Please Circle or Underline: ○

Facial Freckles	None	Few	Numerous	
Dimples	None	Slight	Medium	Deep
Moles	None	One	Several	Numerous
Mouth	Small	Average	Large	
Lips	Thin	Average	Full	
Nose Size	Small	Medium	Large	

Nose Width	Narrow	Average	Wide	
Nose Length	Short	Average	Long	
Nose Bridge	Concave	Straight	Convex	
Eye Colour	Brown	Green	Blue	Other:
Eyes Set	Narrow	Average	Wide	
Eye Size	Small	Average	Large	
Eye Sight	Short	Normal	Far	
Eyebrow Arc	Flat	Medium	High	
Eyebrow Thickness	Thin	Medium	Thick	
Ear Size	Small	Average	Large	
Hair colour at birth	Black	Brown	Blonde	Red
Hair colour as adult	Black	Brown	Blonde	Red
Hair Texture	Fine	Medium	Coarse	
Hair Fullness	Thin	Medium	Thick	Balding
Hair Trait	Straight	Wavy	Curly	Very Curly
Dental condition	Poor	Fair	Excellent	Braces Yes No
Palette shape	Narrow	Average	Wide	Buck
Other distinguishing features (eg cleft chin)				

Figure 19. Sample from a sperm donor application form.

Expert matchers

Matching provides verifications and a constellation of references to this anonymous person. It further operates as a system of knowledge to placate recipient anxieties over anonymous donation and render order over risks. This includes an incredibly detailed collation of information on the donor. More so, matchers position themselves not only as experts on donor suitability — the characteristic produced through matching that affirms affinities between recipients and donors; but, in having met the donors, they may verify donor selection, negotiate any differences, and confirm, oftentimes, the "moral character" of donors.

Some patients will send along photographs — themselves, their partners, maybe any existing children — and ask matchers to pull three or four donor profiles that "fit." Patients I interviewed reported anxiety around how to make those decisions and that they had to choose at all; the discomfort often led them to ask for "expert" advice in the form of guidance from matchers. Some of the matchers I worked with and interviewed said they would waive certain screening criteria for "good-looking" donors; or to fulfil the need to recruit donors of certain popular appearances, such as those who were "blonde and blue-eyed." Some matchers mentioned that they quickly "used up" — that is relinquished donors for use to the maximum legal limit of six live births — the "good-looking" donors or hesitated in recommending the "ugly" ones. As recipients can only see "baby" photos of potential donors, and matchers have met the donors as adults and/or have adult photos on file, matchers have greater knowledge and thus greater legitimacy on the question of a match's suitability. Judy, a patient from abroad that came to South Africa for IVF with anonymous egg donation, recalled finally asking for matchers to provide them with a shortlist after searching through databases with several hundred donor options: "I said, 'Look, this is our family. You've met your ladies. I can't tell from a baby picture. I can't tell from description. You match. You can match.'" But the pairs that should "fit" often shifted. At times, it was to have the donor "fit" the recipient, meaning a match would be a donor that resembled (in looks, personality, interests, education) the person they were substituting (the recipient mother or father). Other times, matchers claimed that they were ensuring that the resultant child would "fit" in the family. This meant that an imagined child resulting from the donor and the parent contributing sex cells would resemble the family as a whole. Such matching was made in reference to an already existing child, a sibling, or other family member to reiterate resemblance and thus potential kin.

"Torques" of racialization

Simply put, sorting via race was easy. This was in contrast to some of the desires that recipients requested, such as "sporty," which a matcher complained to me was far too subjective. Part of the ease of sorting via race was that by and large the filiations, the lines between category and embodied person (Bowker & Star, 2000:314-6), remained congruent. Erasmus attributes this to the "heredity-degeneration-purity classification conceptual loop" (2017:99), a reiterative loop through which one comes to understand themselves in the terms of the category. Using this explanation, for the majority within the fertility clinics, their ancestry, their looks, their social habits and class constellated towards racial stability; the infrastructure and reiterative loop of self-identification-corporeality-categories operated seamlessly. However, the ease of matching via race was not always the case. Any disconnection between referents — the application papers, the donor that has met a matcher, and the pictures provided — was part of the job of matchers to shore up. On one occasion, for example, a donor told me that she was "grilled" by a doctor, who looked at her and looked at the baby photo and questioned the veracity of the photos. After insisting that it was indeed, she in the photos, the doctor proceeded to question her about her parents, her grandparents, and her siblings' eye colour and professions.

Lacking a database with enough options among race categories meant that matchers would either have to lose the business of a potential client, or strategically navigate racial categorizations to provide a suitability fit. For instance, an embryologist I worked with received a phone request for a black sperm donor. "We don't have very many black donors," he said on the phone. "Would very dark Indian work? Send the photos and I'll see what I can do." How do matchers attend to finding a suitable fit when they perceive incongruence between the racial categories and the body and biography of the recipients, or a lack in their "stocks?" What relations do they invoke to stabilize their selections? Bowker and Star (2000) describe this as moment of "torque," the twisting of biography and experience to fit within classification systems. I did not see navigations among white patients; in my observations, I saw only matchers make strategic equivocations among patients of colour. Here are two such cases for comparison.

I interviewed Dhriti at a clinic, some months after a failed donor cycle. Dhriti was originally from the UK, described herself as British-Indian and a Christian. Her husband was South African; Afrikaans, she clarified. She described to me the doubts she had of the "fit" when presented with a donor from the clinic:

> So I see this picture of her [the donor] as a child. And I was thinking, really? Is that a match? Because the other pictures [of other donors] I saw were like, you know, curly brown hair or whatever. This was quite a recessive, like she had light, light brown eyes, very light skin, very light brown hair. But they [the doctors] were like, "No, don't worry, [the donor] didn't turn out like that, she got darker." . . . But then, I'm like, well my husband, my husband is so opposite to me. Blue-eyed, fair. So the doctor was saying, "Dhriti, you could pop out a blue, or green eyed, whatever . . ." But you know what, I trust [the doctor] with my life.

In the second case, Gloria, a matcher that I interviewed, described trying to find a suitable egg donor for a patient she described as Ethiopian, "African, but light-skinned," married to a German man, and living in South Africa. To Gloria, a coloured egg donor would match best, but the clinic had none in their database. During this time, Gloria and her husband joined the couple for dinner, and during the course of the evening, she found out that the recipient woman was educated in Europe, spoke French, and that her husband was a professor. "Our black genes would not have fit in this family," concluded Gloria: "Our black" referring to the black population of South Africa, in contrast to the blackness of Ethiopia, and using a possessive syntax to frame the relationship. The patient and Gloria agreed on a white donor.

In both these cases, the women searching for an egg donor were women of colour, one identifying as "British-Indian" and the other as Ethiopian. Neither of these are explicitly racial categories, at least not in the dominant ways used in South Africa, and are instead geographic descriptions. Sometimes matchers or recipients insisted on finding donors that correlated with the racial categorization of the recipient. In those instances, however, the listed race of the recipients fit within South African classifications. This was in contrast to Dhriti and the Ethiopian woman, who, by privy of being foreign, "light-skinned," and displaying certain class markers, did not align easily with local categories. The matchers perceived the women's race as incongruent with the classification system; to their assessment, the person and the category required a "torque." In both cases, the matchers invoked various pieces of information and relations that reveal what elements become enrolled in racial classification. In the first case, it was the triangulated kinship relationship between Dhriti, her husband, and the potential child. Because her husband was fair, blond, blue-eyed, and the donor somewhat "darker," the doctors purported that a white, ethnically Portuguese donor would fit. I would argue that her professional occupation, Christian religion, and British origins were also factors. In the second, Gloria was explicit that the assessment of the recipient woman placed her in a different category than the black population of South Africa, citing her education, mobility, and skills in "Western" languages assessed over a dinner.

Furthermore, in both these cases, the matchers deferred to donors classified as white. I believe that in these specific cases, the matchers assessed their race, via appearance as "light-skinned," their social standing, mobility, and relationship with white partners, as a "good fit" for white donor genetics. That is, the two women were of sufficient status for white eggs; or, as Gloria stated, of a high enough status to be "too good" for South African blackness. Gloria's statement stands in tension with the words of Dr. Coetzee, who described donors from the "Ciskei and Transkei" as having the potential to serve the "whole of Africa." The tension is situated between an understanding of a singular blackness in Africa (as Dr. Coetzee describes), or as particular and local (as Gloria differentiated between South African blackness and that of her Ethiopian patient). Here, I believe, we can see how political and economic situations structure the fluctuating scale of racialization; at times race was deeply local ("our black genes") and other times broad, flattening ethnic, class, and religious differences.

Both cases also demonstrate the power of matchers. Dhriti notes that she "trusts the doctor with my life" even after airing some doubts. Several researchers have referred to how these mediating figures, particularly medical doctors, operate as gatekeepers — in relation to (Nordic) whiteness (Homanen, 2018:33), fertility (Ikemoto, 1996:1034), and with egg donors who do not fulfil the idealized package (Haylett, 2012:230). There are many comparisons to be made in regard to whitening that Elizabeth Roberts (2012) describes in her monograph on Ecuadorian IVF and egg donation. There, she describes the *hacienda* system as a template for understanding the ways that male figures (now doctors) oversee donor egg determinations through a prism of the historical ideologies of a national project of whitening (2012:112-128). In doing so, she also unpacks the malleability of Latin American conceptions of *la raza*. In that way, the contexts differ greatly, as South African conceptions of race are more akin to the inflexibility of racial thought in the United States. Yet Roberts' work exemplifies how these mediating figures may draw on historical schemas for understanding race. Her work and the data that I gathered suggest a more complicated understanding of choice in the context of donor gametes, when both the infrastructures of donation systems and the actors performing these navigations curate certain choices as legible and legitimate within certain categorical schemas.

Curature and genealogy

For matchers this process was important and at times fraught. Their investment in the project of matching suggests not only that curature, like choreography, was highly, delicately staged — and therefore precarious — but also that it relied on relational and powerful mediations of information, histories, anxieties, and naturalizing of notions of race and kinship.

Gloria believed matching was crucial in IVF with gamete donation and took the role seriously. She worried that without suitable matching, the intended mothers would feel disassociated from their potential children, and lack appropriate attachment. When meeting with Celeste, 40, in a consultation

I joined, they discussed the profiles of donors and how the matching process worked. Eventually, the conversation turned to the sexual practices of the young donors, which they said differed from their own Calvinist upbringings in the NGK. "But it doesn't make them a bad person," said Gloria. Celeste, like Gloria, white and Afrikaans-speaking, agreed: "Times are just different now for these youngsters." Later, I sat with Gloria as she demonstrated matching Celeste with a donor that she had in mind. Gloria went through Celeste's questionnaire, noting that she described herself as an extrovert, but that she liked small gatherings. Gloria opened a donor's profile and noted that the donor described herself as opinionated, and that she liked small group gatherings. While the recipient had travelled extensively, the donor wanted to travel. These details were proof of a good match. She also considered both parties' appearances: "They're about the same build, maybe the donor is a bit bigger," she said.

The technologies — questionnaires, spreadsheets, databases, drop-down menus — introduced in the earlier section, provide the infrastructures and criteria through which Gloria may "know" and curate donors for Celeste. Gloria highlighted certain elements of information through which she asserted similarities between Celeste and a donor (being opinionated), or mollified other information (such as sexual history, which could detract from donor "respectability"). In light of these strategies of matching, I seek to interrogate the power and relational aspects of this role; how gathering and curating information involves remembering, forgetting, and even neglecting, to thus fit the narrative of suitable matching; and how the context of increasing access to ever-more donor information in turn reaffirms the importance and position of mediating figures.

To think through this powerful semi-professional role, I introduce the idea of "curature" to describe the work of donor matching and to expand upon Rose's idea of "pastoral powers" (2007:29). Rose describes novel translational figures of biomedicine — in this case, matchers — who are endowed with forms of premonitory knowledge, "whose role is to advise and guide, to care and support, individuals and families as they negotiate their way through the personal, medical, and ethical dilemmas that they face" (2007:6) and in so doing, "blur the boundaries between coercion and consent" (2007:29). These figures include doctors and nurses, but increasingly also genetic counsellors and other figures that interpret and counsel. It is a profoundly relational role, operating between ethics, language, and values of both parties — that of the guided and the guider (Rose, 2007: 72). Drawing from Rayna Rapp's (1999) work and Rabinow's notion of "pastoral keepers" (1996), Rose predicted that sites of pastoral powers would proliferate as new knowledge gave way to increased insecurity and thus the need for prediction and counselling over uncertain medical futures.

Writing about the processes of selection, care, inclusion, and exclusion that are implicit yet often invisible in the work of museums and archives, Carolyn Hamilton and Pippa Skotnes (2014) introduce the concept of "curature." For them, the concept highlights the paradox embedded within curation, in that it includes a notion of caring in the ordering and management of items, but often with "authoritative fiat" (2014:1-23). Their adoption of curature, instead of curation or curating, is an attempt to keep hold of this tension of care and authority, that of nurturing but also of power over objects, in their management, ordering, and dissemination. I have repurposed this concept to think about the dynamic and relational ways certain "choices" are rendered legible and legitimate, made through a form of authority that arbitrates racialization. As in the curation of an archive, the matching process is a practice of both preservation and alteration; preserving the intertwined fictions of genealogical transmission (Ingold, 2012), racialized corporeality, and naturalized kinship, while curating the biographical information on donors to "fit." While it serves to preserve the seeming "naturalness" of racial inheritance, I show here it is an intentional process of cultivating racialized kinship.

What was at stake for matchers? The futures at stake when matching these elements invoked anticipatory fears involving the resultant child. That is, matchers feared, as Gloria had, that an unsuitable pairing meant that the mother would not bond with and attach to the child. But more often, matchers expressed the worry that unsuitable matches would result in a child that would not "fit" in the family. The latter emphasizes the biologization of a variety of elements, such as social status, education, and class, that are framed as genetically transmissible. Here, Dr. Pierce, a fertility specialist, describes the worry with unsuitable matches:

> Often there was a good donor that was very intelligent, went to a fancy school and studying, or whatever it was. And [the matcher] would say, "No, we don't think it's a good match for this couple because they're very working-class and that kind of stuff." . . . You also don't want the child to be frustrated in a family.

Dr. Pierce agreed that the matching of a well-educated donor with a working-class family would result in a poor situation for the resultant child. This frames reproduction through a "prism of inheritability" (Duster, 2003), whereby education or intelligence is genetic, echoing early eugenicist ideas. In addition to framing such elements as potentially inheritable, the anxiety over the child "fitting" alludes to fears of knowing and not-knowing genealogies and the particular local articulations thereof. To some, anonymity was simply an impasse; one could never "know" enough. One couple, who used a known donor, refused anonymous donor eggs, saying they wanted to know "the bloodline." Another patient I interviewed rejected the idea of anonymous donor eggs and explained, "[Y]ou never know what you're going to get." To expound on this belief, she described a case, reported in the media, of an adopted child later murdering his parents. In her view, no amount of information could assuage her worry of not knowing, and further, that what she did not, or could not, know would emerge in the resultant child.

Charis Thompson refers to the ways that clinics and recipients operate with folk notions of inheritance, the ideas that elements from the donor biography and corporeality could emerge in the resultant child, as a kind of "causal agnosticism" (2009:136). This describes the uncertainty of inheritance, and yet a compulsion to then act as if there is a causal relationship. There is an element of anxiety amid the unknown. In curature, in culling, mollifying, organizing, and managing the information, matchers are simultaneously remembering and forgetting, proliferating some details and culling others, subsuming some facts into larger categories. This is perhaps what haunted those who refused anonymous egg donors. It reflects Melissa Steyn's observation that whiteness in South Africa has always formed in relation to the enduring discourses of perceived threat: "Holding on against the odds, holding back the peril, the anxiety at the heart of whiteness in South Africa" (Steyn 2001:25). I am not asserting that those who expressed anxieties over donor eggs were explicitly worried about unknown racial origins. But the state of not-knowing genealogies parallels the historical racial anxieties over whiteness, and the internal perils and (im)purity of origins that could emerge in a future generation.

Conclusion

South Africa, a country with enduring racial inequalities and racist ideologies, is also a node in global repro-flows, particularly in search of the oocytes of white women. This chapter contributes to an understanding of how race is enacted in donor assisted IVF, a space that opens up ideas of inheritance to unique articulation. Through tracking information management systems, the material infrastructures through which information is compiled, organized, and sorted, we can see how race becomes an "easy" and "common-sense" method of sorting donors through the clear filiations of corporeal body and category. In moments of racial instability, matchers must "torque" biographies and bodies through classification systems.

Many feminist scholars in reproductive technologies have argued that the notion of "choice" and its invocation of individualism, invisibilizes the reality that decision-making is often deeply embedded within collective values, political economic conditions, and social relations (Rapp, 1999; Gammeltoft, 2014; Whittaker, 2015). Here, I have considered "choice" of racialized gametes through a different angle, that of the structures of information and knowledge of donors through which racial categorization is stabilized. As such, I have used the concept of "curature" to think through matching as a relational process managed via the powerful actors of matchers, translational figures that cull, curate, highlight, and invisibilize information during the process of matching donor gametes. In doing so, I have highlighted the various everyday epistemologies of "knowing race" that matchers use to curate choice and assert a fit prior to the final say of would-be parents. Curature encompasses not only the way that "choosing" is deeply embedded within social relations, histories, and anxieties but also the infrastructures, relations, and logics through which choices are (pre)selected. The objective is to theorize how various elements are brought together to create a coherent narrative of relatedness between recipients and donors (and the resultant child) via this powerful gatekeeper figure. An ethnographic examination of this process in South Africa highlights how matching donor gametes draws upon and stabilizes enduring racial categorization into the post-apartheid era, reproducing race and, in particular, modes of whiteness.

While the historical and political context provides a template for current enactments of race, the location of power in making race has shifted from largely state actors and institutions to private fertility clinics. This echoes not only an increasingly neoliberal landscape for healthcare (Mooney & McIntyre, 2008), but larger cultural trends of what Sarah Nuttall (2004) has described as the "intensification of private life" in South Africa, and a retreat (notably for those of means) from the public realm to the private and technological. This retreat to increasingly privatized — and thus often under-researched — spaces means ever more difficulty in seeing these new powerful actors mediating novel articulations of racialization in South Africa.

Finally, as several historians have noted, there are distinct political conditions where disparate groups come together, neglecting or ignoring ethnic divisions, and merge under the banner of whiteness (Dyer, 1997). The growing literature on the intersections of new reproductive technologies and race seem to point to conditions — political, historical, geographic imaginations, logics of race and kinship, and the desire for certain kinds of children — that bring disparate corners of the globe under the banner of whiteness, thus making the market for something called “white eggs” conceivably possible. Yet simultaneous to and in tension with that globalizing order of whiteness are the local articulations, anxieties, and fears that become subsumed within categories, recruitment infrastructures, and matching processes, thus glossing over, neglecting, or rejecting the unknown or “just-about-white.”

Chapter Seven:

Making laws, managing potentials: A history of ART family-crafting

> The nucleus of organised human society is the family and it is within the family unit that man has reproduced himself. The entire Judeo-Christian culture and its concepts of family law have been built on the foundation of the monogamous family system in which legal affinity is based on genetic links between parents and children who were conceived as a result of intercourse between their parents (Lupton, 1985:277).

M.L. Lupton, a South African legal scholar, highlights the way "Judeo-Christian"[112] ideology combined with the notion of the nuclear family formed the basis for the apartheid state's understanding of its political foundations. The marriage relation was the exclusive site of sexual relations and therefore also of procreative relations, establishing a set of boundaries that the state, legal, and legislative actors in South Africa, in trying to make laws to govern the legitimacy of children born from sperm donors, struggled to harmonize with their understandings of the relationship between biological ties and kinship ties. That is, the addition of donor sperm into a normative, ideal monogamous marriage partnership challenged the correlation between sexual, marital, and procreative relations, and threatened the assumed legitimacy of those children.

The next two chapters deal with kinship and the "management" of delineating relations in the fertility clinic in light of potential "reproductive others" (Freeman, 2014) — donor fathers, and

---

[112] Though in apartheid-era South Africa, predominantly Christian in the Calvinist tradition of the NGK.

surrogate mothers, among others. This chapter takes a historical look at how the state, in its powers to legislate, sought to organize, sort out, and delineate the boundaries of what constituted family when facing the potentiality of ARTs to undo or challenge social sanctions surrounding marriage and the family in a strongly conservative society. The state's efforts to manage kinship reflect the "linkages between the enclosed, private world of the family, and the outside world of the state's legislative apparatus and the project of nation-making" (Carsten, 2003:6). Anthropologists of ARTs have demonstrated how the state and policy-makers have sought to "sort out" arrangements of kin, citizenship, and race in relation to larger projects of nationalism and biopolitical belonging (Kahn, 2000; Birenbaum-Carmeli, 2009; Deomampo, 2015). Kinship studies, a classic anthropological topic, has seen a resurgence in recent decades in response to the rising availability of genetic and assisted reproductive technologies inciting new queries about the question of relatedness, nature, and culture (Strathern, 1992a, 1992b; Franklin & McKinnon, 2001; Carsten, 2003). My participants were deeply invested in the questions of relatedness with their hoped-for children, and I shall take up how kinship was managed in the clinic in Chapter 8.

Beginning in the late 1970s, when the first IVF baby was born in the UK and the rise locally in the use of donor sperm for artificial insemination (AID), I trace the public debates (in media representations) and legislation through to the present discussions around a child's right to know its biological origins. In doing so, I track what forms of family life the state saw as acceptable to condone through the law and situate this within larger public concerns. While I take the 1994 democratisation as a distinct transition in this family imaginary, I also highlight the ideologies that tether the two. To a lesser extent, in providing a history of ART legislation, this chapter also reflects on the way policy shapes potentialities and trajectories, particularly that of the embryo and other reproductive tissue. Here, I argue that the apartheid-era laws on ARTs entrenched a model of kinship — historically embedded in Afrikaans Christian nationalism — that became legitimated through the language of "scientific fact." Despite shifting areas of concern post-democratisation from the nuclear family as the basis of a "morally upright" Christian (and white supremacist) state, to one of a neoliberal democracy concerned with diversity of culture, diverse family arrangements, and individual human rights, the post-apartheid policy landscape for ARTs remains tethered to this earlier history. In this chapter, I trace out the connections between the state's "moral paradigm" and its attempts to legislate family formation through ARTs. These connections reflect upon how technology challenges prevailing norms about how families are made, but in turn, how the legal framework shapes the technologies, and their usage.

"The technique must be in service of Christian morality:" The apartheid state's interventions in the 1970s-1980s

What kinds of families was the state trying to foster? Or asked differently, what were the borders of family life that the state sought to delineate as "good" for the nation? What kinds of families were abhorred?

Forms of conceptive technologies were undoubtedly performed well before any news media took up the story or a legislator voiced his (yes, overwhelmingly *his*) opinion on the issue. By 1978, when the first South African press reports on "artificial insemination" (AI, as it was referred to then, or what doctors now call intrauterine insemination, or IUI) emerged, the world was only a few months shy of the birth of Louise Brown in the UK, the first so-called "test tube baby." The earliest media reports in South Africa had two clear angles: Surveying local doctors and asking them whether they were participating in artificial insemination; and surveying religious and legal scholars on the ethics and legality of AI. Many doctors in the latter group of stories admitted to using AI and AI with sperm donors (AID). At the time both in South Africa and in other locales, the majority of sperm donors were medical students and medical professionals. Simply put, doctors asked their colleagues and students in their midst to provide sperm for AI.

Overwhelmingly, religious, legal and medical professionals praised AI, at least AI with exclusively the gametes of intended parents. Professor J.A. Heyns,[113] a Calvinist theologian, wrote in support of assisted conception technologies such as artificial insemination, calling it “a gift of grace” (Heyns, 1978). The Christian imperative to reproduce, the “natural” desire to have children, and the psychological cost of childlessness were cited by various experts as reasons for the validity and even the boon and blessing of assisted reproductive technologies. All early media reports agreed that such practices should only be conducted within the confines of marriage. One journalist described the result of artificial insemination as such: “Although some high-powered science is involved in all this, the end result is a natural and satisfactory one — the husband has contributed his portion in the sperm, the woman has nurtured her own baby in her own womb, and birth has been a normal process” (Faill, 1978:16). Despite the difference in process (technical rather than sexual), the story reflects that the child resulting from ARTs is as normal as any other — with a recognized mother, who was pregnant and gave birth, and a recognized father. The result is a child just like any other, and the medical interventions involved in their conception are invisible.

Legitimacy

Yet almost all reporting drew a clear line when it came to AI with donor sperm. “I strongly disapprove of it if the donor comes from outside the marriage, as the personal unity of man, woman and child is compromised thereby,” said Professor P.C. Potgeiter in *Die Vaderland* (“Buis-babas: Tegniek en etiek…”, 1978: 9). The Afrikaans press in particular took issue with AI outside of married couples

---

[113] Heyns became well-known in the 1980s after he voiced his opposition to apartheid, and later became a leader of the NGK (Strauss, 2018).

and interviewed several outspoken religious authorities who railed against the use of donor sperm in assisted conception. They felt it violated the sanctity of the marriage union, potentially constituted adultery, would psychologically damage the man who was raising another's child and being constantly reminded of his failure to reproduce, and the resulting child would be considered illegitimate ("Buisbabas: Tegniek en etiek…", 1978; Garbett, 1979; Cohen, 1980; Higginson, 1984a, 1984b). The latter was legally the case. Often-cited legal experts such as Professor S.A. Strauss of UNISA[114] and Professor Johan van der Vyver of the University of the Witwatersrand agreed that while AI with donor sperm was legal, it technically rendered the child illegitimate as the husband in the marriage could not claim parentage (Garbett, 1979; Levin, 1979a; Maree, 1979; Cohen, 1980; Proefbuisbabas…", 1984). A 1979 court case affirmed this perspective. In the case, a mother requested from the court that her second husband be allowed to adopt her child, which came as the result of artificial insemination via a donor. She argued that the child was illegitimate because the genetic parentage was a donor (thus outside the marriage bounds) and not her first husband. The first husband challenged his former wife's petition for illegitimacy yet acknowledged the use of a donor. The judge ruled that the child was illegitimate, and the second husband could adopt (Maree, 1979).

Debates on legitimacy were at the fore of parliamentary discussions on the Human Tissues Act in 1983; some parliamentarians referenced the above-mentioned court case (Parliament. National Assembly, 1983:col.6394). The Human Tissues Act was broad and dealt with a wide array of issues that pertained to the legitimate use and exchange of human tissue; this included determining the moment of death[115] and the use of gametes in artificial insemination (Human Tissues Act, No. 65 of 1983). It was no coincidence that Opposition Member of Parliament Dr. Marius Barnard, brother of

---

[114] Strauss, according to interviews with colleagues, reportedly contributed considerably to the Human Tissues Act of 1983. He was part of the committee for the Department of Health, Welfare and Pension (1981), tasked with establishing the Artificial Insemination by Donor (AID) Code of Practice.

[115] This was a discussion of considerable importance in South Africa. The famous heart transplant in the late 1960s took place, some argue, in part because of the legal vacuum related to determining the moment of death (Hoffenberg, 2001).

heart transplant forerunner Dr. Christiaan Barnard, and member of the team that conducted the first heart transplant, was the member introducing the legislation. The debates on AI, AID, and gamete donation constituted a full third of the time allotted to parliamentary debate on the Human Tissues Act.[116] While many agreed that childlessness (among whites) was a problem that science could address, concerns were numerous. These included the fitness of relationships (parliamentarians were worried that AID would cause marital problems and divorce), donor screening (they did not believe that just anyone could donate and sought to limit donors to those without a criminal record, among other requirements), and the legitimacy of children born from AID. The latter was a grave concern. "According to my theological view [as a Reformed theologian] it is direct conflict with our Christian Calvinist convictions that sex-linkage out of wedlock should be allowed by way of a third person as a donor," said F.A. Staden, a Member of Parliament (MP) from the Nationalist Party. "The aim of marriage as a monogamous institution between man and woman is for that to take place within the union. . . . I believe that in the final analysis this amounts to adultery" (Parliament. National Assembly, 1983:col.6393). Staden's view sought the explicit equation of these three forms of relations — sexual, reproductive, and marital. The National Party was not unified in this belief. Some felt that donor AI was not a path they would choose, but that because there was no illicit sexual activity, the adultery accusation was invalid. The party allowed for a so-called "free vote." The Human Tissues Act passed. Later the NGK's Synod, or church council, forbade the use of donor insemination among congregants, although it allowed for "test-tube babies" using the married couple's gametes ("Synod rules on…", 1986).

The issue of the legitimacy of donor children was legally settled in the 1987 Children's Status Act. There, donor-conceived children were declared "the legitimate child of that [married woman

---

[116] I coded the HANSARD parliamentary transcriptions for the topics of debate. Discussion on AI, AID, and gamete donation totaled 33.29 per cent of the transcribed proceedings in Parliament (Parliament. National Assembly, 1983).

from which the child was born] and her husband as if the gamete or gametes of that woman or her husband were used for such artificial insemination" (Children's Status Act, No. 82 of 1987, 1987:4). The marriage relation between the woman and her husband legitimized the children, regardless of the contribution of seemingly "outside" biological material. The shifting of the law sought to "catch up" legislation to the possibilities created by ARTs (Lupton, 1985:278). That is, ARTs opened up potentially threatening possibilities — in this case threatening the limits of marriage and the seemingly natural harmonizing of marriage, sexual, and procreative relations — and the state and law merely had to "catch up" and manage the way that technology opened up these relations to differing arrangements. In this case, the marriage relationship[117] served as a proxy for procreative relations. However, marriage remained deeply significant to questions of legitimacy and family. Lupton argued at the time that the definition of family could be opened up beyond the question of genetic ties; yet the role of marriage remains fundamental even in the updated definition that Lupton offers: A "consensual unit wherein a man and woman who are married to each other who agree to have and raise children . . . to give each other the comforts of material and emotional support, regardless of genetic links" (1985:279). Here, labour or care-work, as in emotional and material support, is heralded over "genetic" links, yet the legal code of marriage still provides a lynchpin for the making of a family unit.

Interestingly, while the Children's Status Act settled legitimacy for donor children, it added to the confusion of parentage when involving a surrogacy arrangement. The South African Parliament passed the Children's Status Act less than two weeks after Pat Anthony, a 47-year-old woman, gave birth to triplets — her grandchildren — in the first known surrogacy case in South Africa in 1987. Because Anthony gave birth, her daughter Karen Ferreira-Jorge legally adopted the three children.

---

[117] The law prohibited AID usage for single women, limiting its usage to married women and only with their husbands' explicit permission.

Until then, South African law assumed a natural relationship between birth and offspring. Birth and labour had served as a proxy for maternal relations; again, the potentialities of ARTs, surrogacy here, detangled those assumed relations. The solution was a legalistic one, that is, adoption.

Surrogacy raised additional concerns: Surrogate mothers could legally claim parentage of the child and refuse to hand the children over to the commissioning parents. Soon after the birth of the triplets, the apartheid state convened a commission to investigate surrogacy and provide recommendations on how to legislate it. Some of the key issues were that of parentage and payment for services. However, the South African Law Commission on Surrogate Motherhood eventually submitted its report in April 1993, just a year before the first democratic elections (Draft Bill on Surrogate Motherhood, 1995). The new government, post-1994, made significant changes to the bill, but the draft legislation reiterated the mode that the state sought to frame acceptable families. Firstly, the law required that surrogates already have a child "born the natural way" and be either married, divorced, or widowed. The embryo must involve at least one of the commissioning parents' gametes, what would later be referred to as the "genetic link requirement." The commissioning parents must be married, and the law allows for evaluation of both parents and surrogates as to whether they are deemed "suitable persons" to act as either parents or surrogates. As for parentage, the draft bill deemed that: "Any child born as a result of the artificial fertilisation of the surrogate mother in accordance with the agreement shall for all purposes be the child of the commissioning parents as if the commissioning wife had given birth to the child within her marriage to the commissioning husband" (Draft Bill on Surrogate Motherhood, 1995:4). However, seeing as though the draft legislation came on the heels of the decisive political shift of 1994, the new government held off on passing the law for several years and then only after review by a task force (I shall take this up in the second part of this chapter on post-1994 legislation).

Lupton argued that the need for legislation to take on the issue of legitimacy was, at the time, "aimed at preventing the stigma of illegitimacy and the heartaches of courtroom battles over custody, visitation rights, and the support of innocent children" (1985:278). Lupton's analysis was written at a time when many of the religious marriage unions (such as Muslim) were not recognized by the state (Burman, 1992:22). David Chidester, in *Questionable Issues*, tracks the Christian ideology underlying the focus on legitimacy. He writes that in 17th-century English society, the issue of illegitimacy was tied, not only to the state's interest in name and inheritance, but religiously despised for its connection to adultery, incest, and fornication (Chidester, 1992:151). However, just a few decades later the statistics on legitimacy comprised part of the larger biopolitical project centred on the management and disciplining of the family. Quoting Foucault (1978), he writes:

> With respect to illegitimacy, that discipline required a socialization of procreative behaviour in which the "organisation of the 'conventional' family came to be regarded . . . as an indispensable instrument of political control and economic regulation for the subjugation of the urban proletariat: there was a great campaign for the 'moralization of the poorer classes'" (Foucault, 1978:122, as quoted in Chidester, 1992:152).

In South Africa, Chidester argues that while the early Christian missionaries decried what they saw as the rampant problem of illegitimacy among Africans, early 20th-century anthropologists viewed it differently. Summarily, many argued that while illegitimacy was not a "traditional" problem, it was increasingly an issue due to the growing "Westernization" of indigenous societies (1992:156-160). Chidester asserts that it was just these types of anthropological arguments at the time — in South Africa of the 1930s and 1940s — that fed the ideology of the architects of apartheid, who argued that it was contact with Europeans that was facilitating the degradation of "traditional" African society (1992:161).[118] He writes that the question of illegitimacy, in the minds of apartheid's architects, related to "aspects of property, purity, and population control:"

---

[118] To reiterate, the logic of apartheid, at least its outward ideology, was to "promote" the separate growth of cultures and races through preventing integration and thus its potential for dilution of cultural and racial purity.

> The concern for purity, or "blood purity," was certainly sexual, but it was almost exclusively symbolized as a racial purity that had to be protected against any mixture. Finally, both entitlement to property and protection of purity required legislative measures of population control, demanding all the institutionalized structures of social separation (Chidester, 1992:161).

Beyond the initiation of apartheid, Chidester's analysis concludes with the 1980s, when the state reaffirmed its position as a Christian nation and the national interest in both the public and private morality of its citizenry. There, he connects the state's moral order as underwritten by a Christian "demonology" that viewed illegitimacy as a symptom of a larger moral decay, linked with incest, satanism (see also Falkof, 2016), communism, and sexual and racial degeneracy (Chidester, 1992:162-163). It seems extraordinary, reflecting on this today, that the 1980s state's interest in illegitimacy and the seemingly banal fears in a discussion of AID could link to larger "inner demons" (1992:162), as Chidester refers to them. However, what he[119] argues for is recognition of the way that the state's interest in illegitimacy related to larger social anxieties of "purity" of race and the control of sexuality. Law makers were, by technological innovation, forced to re-negotiate the strict equation between sexual, reproductive, and marital relations. In other words, they were forced to compromise on "genetic purity" (while maintaining racial purity within the family) in order to protect the nation/race and the institution of marriage.

Race and sexuality

When AID first emerged in South Africa, the Department of Health, Welfare and Pensions (1981) commissioned a committee, comprised of legal and medical experts, to establish a code of practice among health professionals administering AID. These additional measures restricted AID to married couples only and required that the physician obtain specific permission from husbands to proceed. It

---

[119] In a different vein, media studies scholar Nicky Falkof's (2016) book *The End of Whiteness* also links public moral panics, in her case related to satanism, to the end of apartheid, fears of social moral decay, and the impending end of white privilege.

provided explicit gatekeeping power to the physician to assess the couple's "social and psychological attitude and [the physician] must not perform AID unless he has satisfied himself that they are apparently living together in harmony and are capable of accepting the responsibilities associated with parenthood" (Department of Health, Welfare and Pensions 1981:782). I read this as providing medical physicians with legally sanctioned status as "gatekeepers" to screen patients for their apparent capabilities as parents. In this way, the power and responsibilities accorded to medical professionals extend beyond medical concerns to including the assessment of "harmonious" relationships and financial forecasting. This interpretation — that of physicians being sanctioned as and also seeing themselves as gatekeepers for procreation — is supported by the findings of Steven Brokensha (1989), who conducted his Master's research in clinical psychology on IVF at Groote Schuur Hospital in Cape Town in the late 1980s. There, he argued that medical professionals used their gatekeeper status to decide who to accept within the publicly-funded programme;[120] that "some people should not be parents" (Brokensha, 1989:33) was among the array of rationalizations offered during the screening process, in addition to the concern over limited resources. Brokensha found that aspects such as adequate housing, social values, education, financial security, and marital harmony were among the criteria that social workers used to screen out patients for the programme (1989:37). Determinations, by physicians and legislators, regarding who should not become parents extended to other, often despised social groups.[121] South African media coverage reflects this kind of thinking, as in a case where a journalist, clearly scandalised by reports that lesbian women were using AID in the UK, surveyed local physicians and gynaecologists to ask if something similar was occurring in South Africa. The answer was a resounding no: "Never, I think that's madness," one doctor told the reporter (Bell,

---

[120] Since the 1980s-era Groote Schuur programme was publicly funded, it could accept only a limited number of patients, with the result that screening procedures were instituted.

[121] Sexual relations between women, and sexual relations between men were also prohibited in law at the time (see da Costa Santos, 2013).

1978). Further, within the media, doctors, and legislators, all seemed to agree that couples undergoing AI or AID should be married and be carefully screened before being permitted to proceed.[122]

Along with the main concern about marriage and stability, other issues arose, such as concerns about "designer children." Many of the debates were (neo)eugenicist in nature. Professor P.G. du Plessis, a philosophy professor at Rand Afrikaans University (RAU[123]), was quoted as arguing for the use of ARTs within a strict Christian moral code: "The technique must, however, be in the service of Christian morality. If it is to be used to create a super race, or simply to buy it in the supermarket off the shelf, it will not be in the service of Christian morality and I will object to it" ("Buis-babas: Tegniek en etiek…", 1978:9). Looking back, this statement is a fascinating moment, particularly its dissemination during the height of apartheid, from one of the country's most conservative universities, and published in one of its most conservative newspapers. Despite the enthusiastic support of racial segregation and superiority of whites, Du Plessis saw the intervention of technology in the pursuit of racial superiority as immoral. I believe the lynchpin here was the issue of a commercial ethos. That is, in Du Plessis's view, one could not *buy* superiority or social standing, it was instead "natural." In another article,[124] Dr. Sylvia Viljoen, a sociologist at UNISA, condemned the use of "test tube babies," fearing that it led to a moral slippery slope whereby a market for babies would ensue ("n' Socioloog besin," 1982:11). These examples came predominantly from the most profoundly conservative and religious elements of the Afrikaans press and church.

Another fear was the potential for "improper matches." Several parliamentarians raised the issue of matching the "population group" (i.e. race) of donors to families. Van Staden first asked that the Minister "insert a provision to the effect that the donor must belong to the same race group and

---

[122] Some of the debate in Parliament was not about screening (all agreed that couples should be screened), but whether it should be physicians screening or whether social workers or psychologists should take up this task.
[123] Now the University of Johannesburg.
[124] This was published in the Afrikaans-language *Die Transvaler*, a newspaper launched with the purpose of promoting Afrikaner nationalism and culture; the infamous architect of apartheid Henrik Verwoerd was its first editor (Fourie, 2007:67).

not a different race group" (Parliament. National Assembly, 1983:col.6396). He later asked that the practices written into the code should reflect that the couple's wishes with respect to race and religion of the donor be assured (Parliament. National Assembly, 1983:col.6442). The Minister from the Department of Health and Welfare, Dr. C.V. van der Merwe, reiterated that the doctor's role was to "make the donor as compatible as humanly possible with the spouse of the married woman," and to ensure as clear "correspondence" as possible between the donor and the recipient (Parliament. National Assembly, 1983:col.6442). The Codes of Practice (1981) says that "matching must be done for population group and colour of hair, eyes, and skin" (Department of Health, Welfare, and Pension, 1981:6).

Finally, the Human Tissues Act 1983 and the Codes of Practice 1981 are where we have the first signs of the limits to the number of births to which a donor can contribute; in these regulations, the limit was five donations. Several countries have donor limits, set explicitly in relation to a fear of unknown and unintentional "consanguinity," meaning that the adults born from donor gametes may unknowingly and in the future have sexual relations and potentially children (Dennison, 2007; Sawyer & McDonald, 2008; Scheib & Ruby, 2009 . Simply put, policymakers were (and are, see the section on Biological Origins) afraid of "accidental incest." That these imagined persons are thought of as siblings irrespective of them knowing of their genetic ties reflects the belief that "the fact of sharing genes is already the fact of being kin" (Ariza, 2018). The fear of accidental incest was made more fraught by Afrikaner anxieties deriving from the "founder effect," whereby a population is derived from a small group of "founders" and thus susceptible to genetic diseases (McDougall, 2013).

A bioethicist I interviewed reiterated that the reason the donor limitation was so low in South Africa by comparison with other countries,[125] came from the understanding among law makers that

---

[125] While it was five in South Africa (updated now to six), the limit in the Netherlands is 25; Austria and Belgium, countries with less than 12 million people each, allow 10 (Sawyer & McDonald, 2008).

ARTs and AID would only be performed within the white population. That is, policy makers envisaged a population of 4.6 million[126] among which to concern themselves with accidental incest. Ames Dhai, also a present-day South African bio-ethicist, speculates that the limit to donation emerged from this particular time and anxiety: "It is possible that the 1983 Act was restrictive because the pool of donors and recipients was limited to the small minority of advantaged individuals in the country at that time, when the possibility of consanguinity could have been a real fear" (Dhai, 2014).

The state, while by no means homogenous, undoubtedly viewed family life along the lines of race. That is, the imagination of families, family formation, and reproduction took place *within* racially distinct groupings. This was codified by laws such as the Immorality Act, which prohibited sexual relations across racial groups, and the Mixed Marriages Act, which prohibited marriages between those from different racial groups; both were repealed in 1985, just two years after the passing of the Human Tissues Act (Sherman & Steyn, 2009:55-81). These imaginaries resonate today. As an example, when I interviewed a leading expert in the field who was active in the IVF industry during the 1980s, I asked him about the donor limits. Why five?[127] I asked. In comparison to the Netherlands, which allows for 25 live births and has a much smaller and denser population of roughly 16 million, why so few here?

> **Tessa**: I think it's in the Netherlands, which is a smaller population, they allow 25 births [on the donor limit]. Yeah, so it does seem something that [the limit] is quite small [in South Africa by comparison].
> **Dr. D:** I think they [the Netherlands] are 13 million. They are double our size.
> **Tessa**: Well, we are 60 million here.
> **Dr. D:** Yea yeah but the Netherlands is a more homogenic population.
> **Tessa** Yes yeah
> **Dr. D:** So I think one can perhaps . . . then you're back in the racial issue. But perhaps the black people must have more, because their population is bigger.
> **Tessa** Oh ok
> **Dr. D:** But now you're coming . . . huh interesting.

---

[126] This was the population of those classified white in 1981 (when the Department of Health, Welfare and Pensions suggested the limit of five) (Statistics South Africa, 2000). The population of South Africa in 1981 was 24.6 million, meaning whites comprised 18.7 per cent of the total. However, the 1981 figures do not include the former independent "Bantustan" states of the Transkei, Ciskei, Bophuthatswana, and Venda, which together had a population of roughly 7 million in 1994.

[127] The Human Tissues Act (1983) and Codes of Practice (1981) limit donations to five; the regulations (2012) from the National Health Act limited donations to six.

> **Tessa**: What were you thinking?
> **Dr. D:** I was just thinking about the Xhosas are 6 million and the Zulus are about the same size. Other black groups are smaller, but you know there is interaction between the racial groups so, yeah yeah, I don't think that will fly.

The above conversation is admittedly hard to follow. When the doctor first says, "They [The Netherlands] are double our size," the "our" he is referring is both "South Africa" and the white population of South Africa. As with Dr. Coetzee from the previous chapter on race, the doctor here is mapping the nation in terms of the white population. When I pointed out that "South Africa" comprises 60 million people, the doctor began to stumble, discussing homogeneity of population, racial groups, and interracial relations. He began to calculate the demographics of the different linguistic-ethnic groups, such as Xhosa, who have a population of six million (equal to white people). When he concludes that there is "interaction" between the racial groups, he is discussing the inter-ethnic relations among the different language groups (Xhosa, Zulu, Swazi, for example), which were all classified as black during apartheid.

My point here is that these regulations were formulated within a particular context — apartheid in the 1980s —where certain notions of race, population, sexuality, and family became embedded within the practices of reproductive technologies.

Discussion

Serious anxieties deriving from the apartheid-era include the legitimacy of children born from donor gametes, proper matching of donors and commissioning parents, and the limit placed on donations for fear of accidental incest. Such anxieties reflect on the state's interest in managing and disciplining the family as a particular site of potentiality. The anxieties also reflect how potentialities within the family stoked apartheid-era related fears about race and broader social and moral decay. The state sought to maintain the borders of family along ideologies of hetero-patriarchal, Christian beliefs. The well-being of children was an extension of the primary site of morality and futurity — the Christian heterosexual, white family — and the primary relationships — the married woman and her husband.

For both the draft version of the Surrogacy Bill (1995) and the Children's Status Act (1987), law makers delineate legitimacy and parentage through a comparison to "natural" versions of kinship links, and kinship defined in a very particular way. The phrasing[128] is particularly interesting: The "as if" it were the gametes of the woman and her husband. As if the donor didn't exist, as if this happened as a simulacrum of "natural conception." The marriage relationship becomes a proxy for a "biological" one.

This, of course, references an articulation of kinship, that Marilyn Strathern describes as such:

> Having sex, transmitting genes, giving birth: these facts of life were once taken as the basis of those relations between spouses, siblings, parents and children which were in turn, taken as the basis of kin relations. Incorporated into such a reproductive model were suppositions about the connection between natural facts and social constructions (Strathern, 1992b: 5).

The relationship between natural facts and social constructs, or simply put, the relationship of "nature" to "culture," that Strathern mentions, refers to the idea that kinship is a social construct (the social relations of family, for instance) that follows a "biological fact." Genetic links or giving birth were the biological facts to which the social facts of kinship (parentage, for instance) followed. The relationship modelled here, of a biological basis for culture, is analogous to how early 1970s feminism viewed the relationship of sex and gender, that is, sex as a biological fact on which the social construct of gender is mapped (Carsten, 2003). Like feminist and gender scholars, anthropologists interested in kinship and the relationship between nature and culture more generally have, in the last two decades, questioned the seeming "facts" of a fixed biology, nature, and sex and have instead argued that, "[Nature] is at least partly 'produced' through technological interventions" (Carsten, 2003:21-22).

---

[128] "The legitimate child of that [a married woman from which the child was born] and her husband as if the gamete or gametes of that woman or her husband were used for such artificial insemination" (Children's Status Act, No. 82 of 1987: 4).

Thus, I am interested in how the "as if" of the legitimacy laws operate. In the attempt to appeal to a "cultural" basis (that is a marriage relationship) over the "biological facts" (the lack of genetic link due to the use of a donor), the laws reveal this as a biological fiction. The seeming basis (biological links) of this particular version of kinship is untethered, yet the law operates "as if" it is there. This keeps "a married woman and her husband" secure as a legal relationship, at the core of kinship to the child.

Finally, a vital concern in the press and legislative debates of the 1970s and 1980s is to ensure that the legitimate use of assisted reproductive technologies occurred only within accredited clinics and under the care of registered physicians. On one occasion, pubic controversy erupted when it was discovered that a couple had created a "donor matching" service in a hotel room, where they were manually and without medical provisions inseminating married women (Levin, 1979b). The Human Tissues Act of 1983 and the Codes of Practice (1981) put a significant level of discretionary and gatekeeping power in the hands of physicians. The anxieties and fears repeatedly invoked — of accidental incest, improper or cross-racial donations, or the use of ARTs by couples or individuals who were not "suitable" — were also useful in ensuring that medical physicians had sole and exclusive medical dominion over ARTs.

High-tech procreation post-democratisation: The state after 1994

The transitional ANC-led government sought to update wide swaths of legislation initiated prior to democracy, and this included health legislation. In the areas of ARTs, this included new legislation on surrogate motherhood and, later, substantial updates on donor gametes.

As previously mentioned, the South African Law Reform Commission (SALRC) submitted its final recommendations on surrogacy and the law in 1993, just a year prior to the democratic election. After it was noted that the apartheid-era commission consisted only of men and included only one black person, the democratic government created an ad hoc committee to review the draft legislation

(National Council of Provinces [NCOP], 2005b; Segar, 1998:7). The committee was tasked with reviewing the draft bill to ensure it lived up to the new constitution, which was signed in 1996. For instance, the draft version limited surrogacy to married commissioning parents, which was later deemed unconstitutional by the ad hoc committee. The subsequent 1999 report on surrogacy suggested a new law that would: One, allow for commissioning parents regardless of marital status or sexual orientation[129]; two, ensure the altruism of surrogacy arrangements; and three, address the parentage of children born via surrogate (NCOP, 2005a). The 2004 Social Services Select Committee, which reviewed both the report and the draft bill, emphasized two key elements for policy-makers — that there be a "genetic link" to at least one of the commissioning parents, and that surrogacy be altruistic, not commercial.

The 2005 Children's Act took up these two issues in its section on surrogacy. On the issue of parentage, the law confirmed that the child would be "the child of the commissioning parent or parents from the moment of the birth" (Children's Act, No. 38 of 2005:152) and the surrogate had no claim to parentage of the child. The Children's Act also introduced the requirement that the child must have a genetic link to (from using the gametes of) at least one of the commissioning parents. There are no prohibitions on single people or gay or lesbian couples using surrogacy. The law requires that the High Court affirms that the commissioning parents be in "all respects suitable persons to accept the parenthood of the child," and must provide documentation of how the child will be cared for and provided with a "stable home environment" (2005:152). Input from social workers and psychologists testifying to these criteria is part of the commissioning parent's petition to the High Court for approval. Payment is prohibited to the surrogate except for insurance coverage, compensation for expenses related to the surrogacy (such as maternity clothing or transportation costs), or loss of earnings related to the surrogacy; legal and medical services related to surrogacy may

---

[129] Discrimination based on sexual orientation was also prohibited in the new constitution.

be paid. At least one of the commissioning parents must be domiciled in South Africa (2005:148). The High Court must approve all surrogacy arrangements, where the details of the contracts, psychological assessments, medical assessments, and social work assessments of the commissioning parents are included.

Surrogacy cases may only proceed if the embryo has a genetic link to at least one of the commissioning parents. Thus, donor eggs plus commissioning parents' sperm and a surrogate is acceptable; but donor eggs, donor sperm, and surrogate is not. Single women using a surrogate must provide the eggs, or single men with a surrogate must provide the sperm. This has been challenged in court in the case *AB and Another v Minister of Social Development* (2016). The first applicant — a single woman in her 50s — was filing to use surrogacy with donor eggs after 10 years of fertility treatments and 18 IVF cycles. Following two miscarriages, the doctor informed AB that she was both unable to contribute eggs towards a pregnancy and unable to carry a pregnancy to term. She sought surrogacy with donor eggs and with donor sperm. The Minister of Social Development disputed AB's petition for a surrogate, arguing on the basis of the "best interest of the child," and that the genetic link rule was put in place to preclude commercial surrogacy and the commodification of the child (2016:10). The High Court concluded that the Children's Act violated AB's right to "equality, human dignity, 'reproductive autonomy,' privacy and access to health care" (*AB and Another v Minister of Social Development*, 2016:7). While the court sided with AB, the court did not confirm the constitutional invalidity of the "genetic link requirement" (*AB and Another v Minister of Social Development*, 2016:128). Thus, the ruling did not become precedent setting and only applied to the applicant, who was able to move forward with donor-donor and a surrogacy arrangement.

In her ruling, Justice Sisi Khampepe wrote that the genetic link requirement unnecessarily privileged one kind of family (genetically linked) over another (2016:47). She further critiqued the assumption that gestation privileges one as a mother over someone who did not gestate. The assertion from the Minister of Social Development that donor-donor surrogacy arrangements would lead to designer babies was lacking, Khampepe found. However, double-donor surrogacy does differ substantially to adoption because of the control and involvement of commissioning parents in multiple stages — from selecting donors to selecting and working with the surrogate — of the process (2016:67-68). Justice Khampepe quoted a psychologist who contributed to the case who argues for the psychological attachment this selection process brings between commissioning parents and the imagined child (see next section for interrogation of attachment discourses). I also argue that the desire to select, control, and manage the seeming "genetic contribution" (via donors and surrogate) to their would-be child also speaks to class anxieties about adoptive children. Adrie, who we met in the introduction of this section, worried that adoptive children would have issues, such as foetal alcohol syndrome. Yet, Adrie welcomed an embryo without any genetic link, and explicitly stated her interest in terms of controlling the genetic contributions. Regardless of how much selecting donors and surrogates can shape the outcome of children, would-be parents certainly believe this is at stake in their choices.

Khampepe's critique of the genetic link requirements reflects the discordance of the current legislative framework. The Children's Act provided for a child from "artificial insemination" or a surrogacy agreement to have access to biographical and medical information about his or her "genetic parents" (Children's Act, No. 38 of 2005:54) once they turn 18, so long as that information does not reveal the identity of the donor. Since this bill was passed in 2005, none of the children born from surrogacy agreements are 18 yet, and as a result are not yet entitled to access this information. The Act also reiterated the parentage of children born from donor gametes:

> Whenever the gamete or gametes of any person other than a married person or his or her spouse have been used with the consent of both such spouses for the artificial fertilisation of one spouse, any child born of that spouse as a result of such artificial fertilisation must for all purposes be regarded to be the child of those spouses as if the gamete or gametes of those spouses had been used for such artificial fertilisation.

The Children's Act in some ways contradicts itself when it comes to a coherent understanding of kinship links and the role of law and biology. When it comes to surrogacy, the law states that the child must have a direct "genetic link" to at least one of the commissioning parents. In her ruling on the case, Justice Khampepe points out that this rule does not mean that a surrogacy arrangement would be acceptable if the donor were a sibling of the parents (thereby providing a "genetic link"); instead it requires the gametes from at least one of the commissioning parents directly (*AB and Another v Minister of Social Development*, 2016). Thus, biology is viewed as primary to kinship links with the resultant child. In contrast, the reiteration of parentage in the Act (as stated above) makes the marriage relationship again a kind of proxy. That is, the child is considered the child of the spouse, regardless of "genetic link," simply because of the marriage relationship. In the case of donor IVF, the spousal relationship ensures kinship.

Finally, the most recent policy update on ART usage is regulations from the 2003 National Health Act; the regulations came into force in 2012 (Regulations, National Health Act 65 of 2003, 2012). The National Health Act 2003, an extensive piece of legislation, predominantly sought to decentralise health care, involve communities in health systems, and ensure the right to health for all South Africans, the majority of whom had, during apartheid, been systematically underserved or not served at all (Coovadia et al., 2009; Mayosi & Benatar, 2014). The administration of ARTs was a minor part of this law, dealt with under Section 8 in the regulation of blood, tissue, and gametes. The ART sections of this law were enacted over eight years (Pepper, 2012). Most of the policy related to ARTs was left to regulations, which came out in 2012.

Many of those I interviewed have critiqued elements of Section 8 and the regulations, with the fundamental criticism being that legislators, bureaucrats, and legal researchers in the state simply do not understand the assisted reproductive technologies nor how they are practiced. The limit to six was an area of sustained discussion and annoyance in the field. Additionally, some medical professionals also said they wished the law specified differently about who was declared a "competent person" to carry out certain ART procedures.[130] Some believed the prohibition on sex selection simply meant that those patients travelled to other countries where sex-selection via PGS was not prohibited. Some of the leaders of SASREG claimed they had provided input to the law but were ignored. One of my interlocutors believed that the Department of Health was not receptive to contributions from a group of white, private-practice physicians.

Much of the National Health Act and subsequent regulations pertaining to Section 8 reiterated several elements of the Human Tissues Act of 1983. Donors cannot be paid, except for "reasonable" compensation for any costs occurred (Regulations, National Health Act 65 of 2003, 2012). The limit changed from five to six live births from a given donor, and without any evidence as to why the limit should be set at six (Dhai, 2014). Major changes included the prohibition on sex selection of embryos, the establishment of a donor database at the Department of Health (which has yet to be implemented as of this writing in mid-2019), and delineated how long embryos and gametes may be stored (10 years) when unclaimed (Regulations, National Health Act 65 of 2003, 2012). The latter, for instance, demonstrates how the law shapes potential trajectories of embryos and other tissues; after a certain time period, embryos can move from frozen (both temporality and in fact) potentiality to waste.

After the Children's Act, the state no longer seemed concerned with the issue of legitimate parentage, seeing that the status of children in cases of surrogacy and donor conception were especially delineated in law. Instead, the new crop of laws post-1994 had a different focus: The right of the child to information about genetic origins, protection against the exploitation and coercion of women involved in surrogacy arrangements, and child trafficking and the sale of babies from surrogacy

---

[130] The law designates a "competent person" as: a) "a medical practitioner specialising in gynaecology with training in reproductive medicine;" and b) "a medical scientist, medical technologist, clinical technologist, with training in reproductive biology and related laboratory procedures" (Regulations, National Health Act 65 of 2003, 2012:4). Some of those I worked with wanted more explicit reference to completing reproductive medicine sub-specialty training for instance.

arrangements (South Africa. Social Services Select Committee, 2005). This reflects the increasingly rights-based discourse inflecting political and public debates in South Africa. Further, it reflects a major shift from apartheid to post-apartheid. That is, while the apartheid state worried about the family as a whole, as reflective of the larger social structure and social morality, the post-apartheid state sought to protect individuals — from exploitation, from rights violations. The shift of concern from family to individual reflects the increasingly individualistic and rights-based approach of the post-apartheid era (see for example Robins, 2006; Colvin, Robins, & Leavens, 2010). But it also reflects a shift in areas of concern from the anxieties of ART potentialities that signalled an "internal rot" and the break-down of the nuclear family, to a fear of rights violations and exploitation for the profit and desires of others: That surrogate mothers would exploit the desires of commissioning parents and demand payment; that commissioning parents would coerce surrogates into "reproductive prostitution" as one public commentator put it (South Africa. Social Services Select Committee, 2015), and the fear of precluding children from their right to knowledge of their biological (and cultural) origins.

The new proposed law on the Right to Knowledge of Biological Origins continues to reflect this shift toward individual rights-based rhetoric. Yet, the push on "biological origins" represents something odd in a context where historical and political-economic pressures have stretched, pushed, and shaped kinship links into a myriad diverse forms, few hinged on the strict "factishness" of immutable biology or genealogy (see Amadiume, 2005; Ross, 2010:76-78). The discourse around the "rights of the child" has circulated in Euro-America for the last decade, reflected in legislation that has prohibited anonymous donation in order for the resultant children to have access to information about their "genetic origins" (Blyth, 1998; Melo-Martín, 2014). In South Africa, I find that the new discourse of the rights of child to knowledge of their biological origins has become tinged with old fears — fear of accidental incest.

Biological Origins

In September of 2017, the South Africa Law Reform Commission (SALRC) held regional workshops on a proposed law on one's "right to know biological origins." This proposed law would affect a vast array of areas from adoptions, to child support claims, to surrogacy and gamete donations. The proposed law, in sum, would provide children with a legal right to know their "biological origins," that is, in the case of ARTs, information related to the identity of the gamete donors. Such a legal change has already taken place in Australia, the Netherlands, and the UK (Melo-Martín, 2014). Some, including advocates for infertility patients and fertility industry insiders, have argued against such changes in other contexts, as they feared the reduction in the number of gamete donors, that it violates the rights of would-be parents, and would be impossible to enforce (Patrizio, Mastroianni, & Mastroianni, 2001; Pennings, 2001). The fear of reduced donor applicants is because a right to knowledge of one's biological origins would effectively eliminate the anonymity of gamete donation, allowing for the children via third-party ART to know the identity and potentially make contact with gamete donors.

These were many of the arguments I heard at the workshop I attended in Cape Town. Bringing together egg donor agency representatives, psychologists from IVF clinics in the area, infertility patients and advocates, one parent of donor-conceived children, and lawyers working in the field of surrogacy contracts, the workshop was intended to provide a platform for discussion about the potential consequences of the law and how this would affect various constituencies. A legal researcher from SALRC, Veruksha Bhana, convened the workshop. Bhana had prepared 240 pages of research on the issue and circulated a 72-page worksheet to participants for them to provide comments. The worksheet described issues ranging from mitochondrial DNA replacement therapy, surrogacy, cross-border reproductive travel, assisted reproductive technology, adoption, abandoned children, and disputed paternity, to birth registration.

The discussion that ensued provided fascinating insight into the concerns and worries of industry and stakeholders. They can be broadly categorised into three areas:

1. Different rights and different people's rights;
2. What constitutes family?
3. Kinship, knowledge, and the role of the state.

Different rights and different people's rights:

The premise of the law was that the child has a right to know their biological origins. As with all discussions of rights, there is a balance, the discussants felt, and the right of a child to know biological/genetic origins could infringe on the commissioning parents' right to privacy, the commissioning parents' right to health, the donor's right to privacy, or the parents' right to culture.

In the first instance, many of those from the industry worried that the law dictating that the child had a right to know its biological origins would infringe on the parents' right to privacy in making medical and family decisions. Many stated in various ways that the parents should have pre-eminence to determine what information and how children should know. Many parents, they claimed, went through IVF with gamete donation for the explicit purposes of keeping the child's origins concealed. Through matching of donors, commissioning parents are able to render kinship visible.[131]

---

[131] Anthropologists have found, in other contexts, that donor matching is framed in terms of making the kinship between donor-conceived children and the commissioning parents visible; that is, because of the desire to achieve resemblance between parents and children, matching becomes fraught with the weight of what Becker calls "resemblance talk" (Becker, Butler & Nachtigall, 2005) in instances where parents keep the donor-status of their child concealed (see Jones, 2005; Bergmann, 2012; Ariza, 2015; Wong, 2017). Jones (2005) uses the expression "passing", which I think is apt in describing the desire to make the visible resemblances "make sense" and thus "pass" as a "nuclear" and "natural" (not technologically mediated) family.

One workshop member, an advocate for infertility patients, raised the question of a right to culture, which is guaranteed in the South African Constitution. For example, she claimed, a Sotho woman, because of her culture's value on ancestors, may only be able to balance her desire for a child with the cultural taboo on gamete donation and adoption through using anonymous donors and concealing the genetic link. Thus, the right of the child to know the origins may impinge on the commissioning mother's right to culture and how she manages her culture with technological and medical advances and fertility desires. In this vein, some argued that requiring parents to disclose has the effect of denying some patients access to appropriate treatment, and a right to health, in a case where cultural contexts would prohibit donor IVF and aspirant parents would like to proceed in secret.

Finally, some questioned the right of the donor to anonymity. One donor egg agency representative read aloud a letter from a donor advocating for continued anonymity. The agency, via the donor, argued that many donors would only donate anonymously, and that the proposed law would violate their right to privacy.

What constitutes family?

Much of the discussion at the workshop focused on the issues embedded within the proposed change in the law from a limit of six to 12 live births per donor. According to the regulations, the Department of Health should have a database of donors with the amount of live births recorded; however, this has, as of July 2019, yet to be established. Part of the proposed change came to what many I interviewed described as the issue with live births versus "completed families." According to fertility specialists, many parents that have a child via gamete donor want to use the same donor for a second or third child. The limit to live births means that the donor may only be used for two or three families. Instead, they had hoped that the law would change the limit to six families rather than the current six live births so that clinics could guarantee a particular donor for "genetic siblings."

The current regulations also stipulate that once the limit of six live births has been reached, the agency or sperm bank must destroy the remaining donated gametes. However, one person at the workshop wondered how this might extend to frozen embryos. Frozen embryos, which constitute both egg and sperm, should then be disposed of as the six live births have taken place. However, embryos, as opposed to frozen donor sperm, technically belong to the commissioning parents, not to the institution. Thus, the institution, the bank or fertility clinic, cannot discard them without the commissioning parents' permission, yet they cannot legally use them if the limit has been reached. Thus, counting live births changes the status of an embryo's potential, from the potential to implant, to potential waste.

Other discussions focused on what constituted parentage and kinship. In some instances, the social or cultural was seen as most important. In other instances, the genetic or biological. This, of course, is the endless debate about what constitutes kin. As Bhana stated in the discussion:

> If I speak about my biological origins, I know my mother, I know my father. I know my toes are my father's toes, and my eyes are my mother's eyes. That is the greatest joy. That someone can look at me and someone say that, "You're definitely sisters." I can only speak from that perspective. Now a child, donor-conceived, how do they feel? They could ask, "Is Latifa, is that my sister?" That's the position that they're in. I'm 1000 per cent sure that my sister is my sister. But a donor-conceived child doesn't know that."

The model of kin that Bhana describes is a distinctly Euro-American way of accounting for kinship that is entrenched in notions of fixed biology and genealogy. What is lacking in the context of donor-conceived children for this model of kinship is the knowledge, which is what the new law proposes to manage.

Kinship, knowledge and the role of the state

A substantial part of the discussion was directed to thinking about the role of the state. How could the proposed law be enforced? Does the state have a right to dictate what parents do or do not tell their children?

That "disclosure," or informing children about their ART origins, was the best course of action for parents was agreed upon. Despite those taking issue with the proposed law, and the enforcement of this disclosure, those present felt that it was indeed best to tell children. Yet, they also acknowledge that parents had complicated and private reasons for not wanting to disclose. No one discussed the question of whether children (or adults from donor-conceived children) would want to know; it was assumed that children would want to know. However, it was less clear *how* the state could come to enforce this. How could the state ensure that parents did tell their children? Would the state be obligated to inform children? Would parents face legal sanctions for not telling? How would the state investigate the sharing of this kind of information within families? Many argued that a more effective process would be for the state to provide counselling to ART patients using donor gametes, to educate, inform, and while doing so, to recommend disclosure, and provide resources to empower parents to do so appropriately.

However, a mother of donor children who was present raised the issue that the question of disclosure may soon be out of the hands of those in the room, and simultaneously move beyond the purview of the state. Like many elements of what may previously have fallen within the ambit of traditional state power, under neoliberalism, knowledge of biological origins indeed may become a matter for for-profit, private commercial interests. With commercial DNA testing available at the drop of spit, the participants raised the question of whether children would be able to find out via services such as 23&Me and Ancestry.com (see Klotz, 2014). It also raises the question of whether genetic anonymity is even possible. Are any donors anonymous anymore?

Discussion

What were the arguments for a right to know biological origins? In essence, what was at stake for the workshop participants and policy makers? There were two issues:

1. Genetic diseases. Advocates believed that genetic origins should be known to the child so that any genetic disease could be traced.
2. Resemblance and cultural knowledge: Advocates believed that without knowledge of one's family origins, or place in the world, children could suffer "genealogical bewilderment."

The SALRC defined genealogical bewilderment as "the feeling of being deprived of one's heritage, religious background, culture and/or race" (SALRC Issue Paper 32, 2017:4). The earliest reference to this term I could find was Sants (1964), who attributed the term to Wellisch (1952),[132] who used the phrase to describe the "maladjustment" of adopted children. Sants (1964:133) defined the problem as, "A genealogically bewildered child is one who either has no knowledge of his natural parents or only uncertain knowledge of them. The resulting state of confusion and uncertainty, it will be argued, fundamentally undermines his security and thus affects his mental health." A review in the 1980s, done in light of AID popularity, found that genealogical bewilderment did not affect mental health if the adoptive or surrogate family met the child's emotional needs (Humphrey & Humphrey, 1986). As Ormond's (2018) discussion reveals, the term continues in use predominantly in discussions about closed adoption practices. It also rests upon a model of kinship predicated upon immutable biology and genealogy, a model that lacks traction in all South African societies, according to the ethnographic record (Amadiume, 2005; Ross, 2010; Block, 2014). The SALRC paper cites the potential psychological harm to the child caused by genealogical bewilderment to be the most compelling reason for a right to knowledge of biological origins

---

[132] Wellisch affixes the institution as the Child Guidance Clinic in Kent, UK, and the article itself is a "Correspondence" piece in the journal *Mental Health*.

Finally, I was surprised at the number of times the issue of possible incest arose as a concern in the discussion. This would be the possibility that two people, part of whose genetic origins lie with the same donor, would meet and have sex (and potentially children). The discussion referred to this as the fear of "half-siblings" and "accidental incest." The repeated mention of accidental incest among donor-conceived children was a concern for the workshop members; it was mentioned several times and in a variety of settings and discussions. That something akin to "accidental incest" continues to be among the anxieties of IVF potentialities speaks to larger social fears. Looking back through the historical record, both legislative and media, provides a glimpse into the larger schema through which the present-day language of anxieties emerges.

Conclusion

The state's interest in and formulation of intervention in ARTs has shifted considerably in the last 40 years, marked particularly by the early 1990s democratic transition and the end of apartheid. The shift can most clearly be characterised by the move from the nuclear family as the basis of national and social morality to that of individual rights and protections against exploitation. However, certain elements have remained consistent, including placing gatekeeping powers within the clinic, particularly with physicians; the fear of "accidental incest;" legitimacy and the issue of providing clarity in parentage; and the concern of commodification in the creation of family. The historical record emphasizes the simple argument that technologies — even global technologies like IVF —emerge and take form within specific historical and political-economic contexts that become embedded within them. The history of the state's effort to manage IVF potentialities, particularly in regard to kinship and family formation, reflects that ARTs came about in South Africa in relation to a particular formation of the population, racial imaginaries, and kinship systems. In this way, it echoes Vertommen's analysis that reproductive technologies "are embedded in global, ongoing histories of (settler)colonialism . . . in these uneven geographies of power" (2015:534). In the next chapter, I explore ethnographically how kinship is addressed in the clinic.

Chapter Eight:

Sorting out kin in the clinic

> Sometimes the transplanted organ is seamlessly integrated into the body, but on occasion it persists as an outsider, stubbornly remains an archive, refusing to be integrated into the narrative of another (Taylor, 2009:20).

Adrie, whom we met in the section introduction, faced complicated questions about notions of relatedness, both in terms of the embryo she might have adopted, and her own story. The embryo would have felt "closer" to her as it was donated by a Muslim couple, who shared their faith with Adrie. But Adrie worried about it also being "too close." Since the couple who donated the embryo lived in the same city, Adrie realized that the "genetic sibling" of the resulting child lived nearby and she worried about the potential for them (the adult child of the donor couple and the resultant child of the embryo) to meet and have sexual relations. The spectre of "accidental incest" haunted her and was among the several reasons why she chose not to implant the donated embryo.

In this chapter, I explore kinship. But kinship, as a century and more of anthropological work has shown, is never singular; it is always also about more — knowledge, substance, gender, ownership, genealogy, attachment, and memory (Strathern, 1992a, 1992b; Carsten, 2003; Strathern, 2005; Bamford & Leach, 2009; Sahlins, 2013). This chapter looks at how kinship relations are managed in the clinic. I trace this through modes of attachment and detachment; that is, how certain discourses and practices sought to bring certain relations "closer," and how others sought to distance them, drawing boundaries around what constituted the family and keeping certain actors out. This is often done through a management of knowledge; that is, what one can know about not-kin donors, about what is impossible to know, and about intentional un-knowing, where knowledge would potentially confuse social roles.

The quote by Jane Taylor in the epigraph alerts us to the significance of narrative in the making of kinship. Taylor describes how transplanted organs can sometimes fuse seamlessly into another body. Analogously, sometimes donated gametes and embryos become integrated into the recipients' narratives of kinship, their "otherness" reconciled into a different story, a different body. This is done through a process of matching and building affinities and attachments. Yet, there are occasions when that integration fails; when that organ refuses, like a haunting that will not fall away. And the anxiety over the lack of integration is ever-present: If conceived by donor gametes, will this child be "my own?"

Thinking narratively about kinship alerts us to how these things are not mere works of fiction nor an assemblage of fact, but how they are a little bit of both, neither entirely one or the other. The "facts" of kinship are made up of stories we do not know to be true or not, that we generally cannot know, and that we often do not treat as knowledge in so far as we do not question its "factishness" (Strathern, 2005; M'Charek, 2013; Klotz, 2014). Kinship, in the so-called "West," is viewed as "a cultural technology not only for naturalizing relationships but also, and at the same time, for the reverse — for transforming naturalized relationships into cultural forms" (Franklin & McKinnon, 2001:16). The role of knowledge — in the creation of facts and the sustenance of fictions — is what interests me in this chapter. As Adrie's story demonstrates, "knowledge" can shift our understanding of kin and not-kin dramatically. What do we "know" about our kinship networks, about those related to us, and our ancestors? And how do we go about "un-knowing" certain elements to ensure narrative coherence? What makes certain embryos and future children seemingly "closer?" What fragments "count" or are observed to make an embryo and the imagined child potentially "more" related, in a context where biological relatedness is presumed to matter? And what practices and discourses go in to ensuring certain actors — donors or surrogates, for instance, or what Tabitha Freeman (2014:1) refers to as "reproductive others" — do not "count" as family? Reproductive technologies have especially challenged the assumptions embedded within the "genealogical model" (Bamford & Leach, 2009) about the "negotiation between what society perceives as the made, and the given, and for the negotiation of what roles are attributed to biological processes and physical bodies within practices of human solidarity" (Klotz, 2014:13). Scholars have made salient contributions to the study of kinship in anthropology, particularly in examining how studies of kinship (and assumptions embedded within those studies) have impacted the discipline of anthropology and reflect larger knowledge systems in so-called Western contexts (Strathern, 1992a, 2005; Bamford & Leach, 2009).

For the patients and medical staff in fertility clinics, the languages of biomedicine and psychological knowledge become effective vocabularies through which to engage the question of kinship. The first part of this chapter returns to the role of matching and how it serves as a process of kinning through ideas of "affinity" and "attachment;" thereafter I explore de-kinning processes. Both kinning and de-kinning relate to social notions of the family and capital; that is, to the building of affinities in matching functions, as processes of kinning and de-commodifying.

Algebra of relatedness

Most IVF patients, using their own gametes, did not doubt their kin relations to the hoped-for child from the treatment. Because the child emerged from the combined genetic contribution of each intended parent, gestated in the intended mother, the kinship relations were generally assumed to be secure. Science maintains a model of kinship whereby each "parent" contributes half the genetic contribution and the "mother" gestates. With those three elements in place, kinship was secure.

Melissa, the patient I introduced early on in this thesis, once joked that unlike the movies where the labouring woman yells at her husband in anger, "You did this to me!" she would have to yell at the doctor instead because it was not sexual intercourse that resulted in pregnancy, but a multi-stage medical-technical process. She just as easily could have yelled at the embryologists, the nursing sister, the pharmaceutical manufacturers, the counsellors. In that logic, they all contributed to "doing this to her." Fetishizing the gene makes it clear, of course, that even while contributing to her conception, those actors were not kin (Thompson, 2005). In instances without third parties (donors or surrogates), the substance of genes and the labour of gestation and birthing provided the "facts" for a basis of kin relations.

It often took long discussions with patients to encourage them to consider donor gametes. Many doctors warned me that this was a potentially "touchy" subject to discuss with patients. Gloria was a psychologist who worked with patients to think through this question of whether to proceed with donor gametes. On several occasions that I sat in with her and a couple, she used a unique mathematical formulation to characterise "how much of you [the parents] will influence this child." She and the doctor in the same clinic often used the terms of "influence" to explain the forms of relatedness. Her equation went along these lines: Children are comprised of 50 per cent nature and 50 per cent nurture. You [the parent] will have all the nurture, of course, through raising the child. Because you are using one set of gametes from the relationship, the child has half of your genetic contribution ("nature"). That means it is 75 per cent "you" or "yours." This form of calculation aligned with two beliefs in inheritance. Firstly, that relatedness was bilateral in so far as each parent contributed half of the total genetic composition of the child. Secondly, what made a child "yours" was an equal contribution of nature and nurture, or genetics and rearing. Gloria was not the only one to fashion relatedness in terms of numbers and equations. Dr. Friebus, at a different clinic, made the same calculation But, he added, "Also on top of that, you've got your epigenetic influence."

Epigenetics, the "collective heritable changes in phenotype due to processes that arise independent of primary DNA sequence" (Tollefsbol, 2011), has shaped a recent turn in biology, public health policy, and genomic sciences. In sum, these novel understandings of the relationship between "nature" and "nurture" proposes genetics are not a blueprint or genetically deterministic, but actually become altered and shifted via environmental (or "nurture") factors (Meloni, 2015; Pentecost & Ross, 2019). That is, there is no independent biology from the social; biology and society (or nature and nurture) are both intimately interwoven and neither independent from the other. Epigenetic influence was not commonly raised in the fertility clinics. On the rare occurrences that it did, it was commonly from doctors asserting to hesitant couples, particularly women unsure about moving forward with insemination of donor eggs, that they had a much larger influence on their child's genetic disposition than science had previously assumed. Gestation meant that there was a "massive potential influence," as one doctor put it. Dr. Theron, another fertility specialist, returned to the quantitative grammars:

> If they're worried that they're not having an effect, [epigenetics shows us] they are having an effect. It's not 3/4 in the couple, but instead more like 9/10 influence. We should tell them that their blood is actually providing a genetic input. They want to have some genetic imprint. This is a good angle to take. It may make it a bit easier in those conversations.

Both doctors and recipients agreed that thinking of relatedness in light of epigenetic understandings of "influence" in the context of donor gamete reassured them of some level of bio-genetic relationship with the resultant child. This reflects the temporal shifts that epigenetics is having in relation to maternal environments. As Sarah Richardson (2015) describes, the conception of motherhood that epigenetics affords is one where concerns about personhood move from the moment of birth, to conception, and even to pre-conception. That is, rather than viewing pregnancy as an experience of labour in which "attachment" and social ties are knit, epigenetics offers a biologization of pregnancy attachment — the influence on DNA that shapes the person potentially born. Feminist scholars have shown the effect of this thinking is to responsibilize future parents (Valdez 2018). It also renders the environment as the womb, so it genders and biologizes the environment in a particular way (Payne 2016; Richardson 2017). With these new understandings in hand, physicians and recipients could construct a kinship narrative through which enough relatedness was imagined between the parents and the potential child so that they could go ahead with the procedure. Epigenetics became useful as a "scientific" mode of asserting more relatedness than was previously thought possible when using donor gametes (see also Payne 2016). "Influence" and "effect" is how Dr. Theron describes the understanding of family relations. One's increasing "influence" means the potential child is more one's "own."

"This isn't a Pick n Pay"

In Chapter 6, I explored donor matching as a process of making and sorting race. Here, I explore its implications for kinship. These concepts are deeply imbricated in one another.

The level of involvement from matchers varied, and not all matchers and industry members agreed on how much involvement matchers should have. Some in the industry disagreed with the practice of matching and the heavy-handedness with which some matchers approached the process, the matcher Riana told me as we chatted in her office. She said one of her colleagues at another fertility clinic said that they should not be "making choices" for the patients. Riana agreed in some ways: Why should a clinic have any say in the choice of donor if it was the patient who had to "live with" their decisions? This was in reference to the reality that their "decision" may result in a child. But Riana also thought it was strange to simply do whatever patients wanted. Her discomfort with granting absolute free choice to patients displays the tensions within medical care in increasingly neoliberal contexts, where the role of patient and client melds into one.

With an enormous list of potential donors, Riana feared that couples would become overwhelmed with the insignificant details and faults of a donor's profile. She worried that rather than looking for a suitable *match*, couples would quibble over heart disease in the family history, or that the donor's sibling had high cholesterol, or that they were not yet finished with their university degrees. "Donors are people and you have to accept them as people with flaws just like you accept in your partner and just like you accept yourself," Riana said. "They're not a product. This isn't a Pick n Pay."[133] Riana felt that every person would have something "faulty" in their genealogy; expecting perfection in a donor's family tree was akin to treating the donor (and the gametes) as products rather than whole people with imperfect bodies and biographies.

Judy and Alex were a couple in search of a suitable match. They had been together about seven years, during which they had gone through six cycles of IVF before finally decided to use donor gametes. I met them during their first visit with Gloria, a clinic matcher. Judy and Alex, who lived in Australia, had planned to be in South Africa for three weeks, with hopefully a quick holiday while the embryos developed in the incubators. At a meeting with Gloria, they discussed their donor selection. She was a young woman who lived about 30 minutes away from the clinic and who had donated three times before. Judy and Alex asked Gloria dozens of questions about their chosen donor. I asked them later what made them choose their donor. They said when they sat down to select a donor, they had found it a much more difficult enterprise than they had expected. They scrolled through pages and pages of possible donors on the online database; eventually they asked the agency to do a matching. The agency sent over six donor profiles. Judy described later some of the things that appealed to her about the donor they chose: Her eyes were big like Judy's; but she also had bad vision; neither women were "model thin;" and the donor liked computers, just as Alex did. They sought a young woman that looked like Judy's already existing kids — large eyes, weightier than average, brown hair, and of course,[134] white. When I met Judy, the process was still underway, as she and Alex asked many

---

[133] A leading South African grocery and supermarket chain store.

[134] Both Judy and Alex were white, so the agency sent over six profiles of white donors. The race of the donor was not even a question as to be so "obvious" in their case. See Chapter 6 and the section on the "heredity-purity-classification loop."

questions of clinic staff about the donor they eventually chose: Was she smart? Does she look like me? Judy even appreciated that the donor's mother had similar heart problems to her own mother. I asked Judy if the donor's family medical history bothered her:

> No, 'cos I have [a similar medical history]. I mean, what you could do, jokingly is get a 6 foot 5, beautiful stunning model. But that's not me. Somebody who is perfect in every single way, but that's not me. The dynamics that you bring in are so out of synch with the reality of who you are trying to match with. So yeah, that's why we tried to get somebody who had, she hasn't got great eyesight, I haven't. I had laser surgery. So, you kind of want the imperfections that are in me to be within her and she matched all those.

It was important for many patients to "match" as literally as possible; that is, to have corresponding elements from physical resemblance to bad eyesight between the recipient and the donor. Choosing a "model-type," that is, someone not like the recipient, was frowned upon. This eschewed allusions to "designer children," where would-be parents choose "perfect" genetic combinations for their imagined child. The enduring normative value in South African matching was accepting donors' (minor) flaws and all, just like you would your own partner; strangely, almost a desire to self-replicate. This reflects Edelman's (2002) argument about the figure of the child and its assurances of replication; that is, he argues the impetus for heteronormative reproduction is a desire for reproducing sameness, and the same present social order.

Affinity and attachment

How do you make such "compatibility" or "correspondence" between two people that by definition (anonymity) would not know their connection if they met in the street? Lauren Mamo (2005) uses the term "affinity-ties," which she describes as a kinship device, to think through the forms of kinship and relatedness that lesbian couples construct when selecting sperm donors. In her findings, couples used imaginations of the social likenesses between donors and the mothers-to-be to forge social relationships and re-materialize forms of relatedness between themselves and the future child, particularly the notion of building attachment between the potential mother and the imagined child. "Likeness," she suggests, "was a future connection forged not by blood, but by similarity" (Mamo, 2005:247):

> The cultural and physical traits of the donors are re-materialized into the imagined potential offspring. This serves as a kinship device in that the potential parents are then able to envision their own social connection to the imagined child. Kinship becomes relational: potential mothers select donor characteristics they might share with, that is have in common with, potential offspring. These are not only physical attributes, but also social and cultural ones (Mamo, 2005:248).

In its anthropological meanings, affinities describe the relations built through marriage. But affinities, defined in the Oxford English Dictionary (OED), has other meanings; not just an intentional and affective relation (colloquially as "liking" someone), or technically, as in the anthropological use of the term to describe marriage relations, but as a scientific term for resemblances, a grouping ("affinity," 2018). These multiple and shifting definitions reflect how the matching process, in particular, animates these multiple registers of affinities — ideas of shared origins and ethnicities, resemblances in terms of physicality, and shared social and cultural characteristics, such as personality or education. The ideas of affinity in some way echoes Sarah Ahmed's illustration of the "peas in a pod."

> In everyday talk about such family connections, likeness is a sign of inheritance; *to look like a family is to "look alike."* I want to suggest another way of thinking about the relationship between inheritance and likeness: We inherit proximities (and hence orientations), as our point of entry into a familial space, as "a part" of a new generation. Such an inheritance in turn generates "likeness" (Ahmed, 2007:154-155, Italics in original).

The objective of matching is to build and describe similarities between donor and recipient so that the donor gametes become an acceptable stand-in for the recipient. The focus on hobbies, interests, temperaments, and personalities reveals that this is not just a physical stand-in. The recipients and matchers want the donors to *be* like them and *like* them, not just *look like* them. Sharing likenesses and producing affinities becomes a way of kinning (Howell, 2003) the donor and, by proxy, the imagined child. Anonymous donation, among other clinical practices (Mohr, 2016), serves to de-link gametes from the biography of the person that produce them. But, interestingly, what happens in matching is rebuilding some — controlled and mediated — social relations, biography, and body back to the anonymous gametes.

The matching process was explained to me as a necessity for the proper attachment between the potential mother and the imagined child. Psychologists, in particular, but also physicians I worked with, worried that lacking a genetic link to an imagined child would create a social distance, a lack of necessary attachment, between the recipient and the child. For clinic staff, this was especially worrisome in relation to recipient mothers. With recipient fathers, the discourse differed. Physicians and psychologists spoke about psychological strain for a recipient father from a missing genetic tie to a child in terms of lineage and patriarchal standing within the family. They worried that a recipient father, where the couple used a sperm donor, would reject the child not for lack of love, but for lack of parentage and legitimacy, and for feeling their masculinity threatened by the lack of "legitimate" (i.e. genetically linked) fatherhood. This contrasted to the discussion in relation to recipient mothers. As a matcher, Gloria was especially concerned with proper matching and recipient attachment with the resultant child. When she provided a short-list of donors to recipients, she often encouraged them to make a final choice of the donor to whom they felt an attachment. Gloria feared that recipient mothers without an attachment to the donor would lack an attachment to the resultant child. Rather than feeling attached, the child would be seen as a "thing," an object within them; she described that feeling as "this thing growing inside me." Attachment by way of affinity to the donor becomes a mode of attachment to the resultant child.

Attachment theory is a widely popular psychological theory relating to the emotional bonds of a child to their caregiver (Van Rosmalen, Van Izjendoorn, & Bakermans-Kranenburg, 2014), attributed to the post-World War II British child psychiatrist John Bowlby. Van Rosmalen et al. claim that Bowlby's work was influenced by Darwin and ideas of evolutionary biology in that attachment of parents to their offspring was necessary for the survival of infant young. Attachment theory has been criticized for being an ethnocentric model of a dyadic child-caregiver relationship (Quinn & Mageo, 2013). The theory's emergence also coincided with a wider cultural movement, in the United States in particular, for the return of mothers to homes where they could theoretically provide more "secure attachment" to their Baby Boomer children (Franzblau, 2002). Feminist criticism of attachment theory, further, notes how it naturalizes and legitimizes a certain kind of (raced and classed) motherhood; a primary dyad between mother and child, where time and resources allowed for intensive mothering (Franzblau, 2002).

The invocation of attachment theory as a normative model for kinning relationships with imagined children in the fertility clinic replicates this form of motherhood as ideal. Further, in framing kinship idioms through the language of psychological theory, matchers and patients medicalize kinship. The relations between potential mothers and imagined children use genetics, biological sciences, and psychology in order to naturalize arrangements and matches made in the clinic. Attachment theory also provides a framework for building relationships between recipients and donors (and imagined children by proxy) through an idiom of love and care, and in direct opposition to idioms of commodification and commerce. That is, attachment counters the potential objectification (and commodification) of the resultant child. As Riana described in the earlier vignette, clinics and agencies guide the patients through their choices, producing the modes of affinity that normalize their selection to avoid the risk that the clinic becomes merely a "Pick n Pay," or the danger of turning the "donations" into "sales."

Why does the "risk" of commodification exist in the IVF landscape? Part of this risk is that IVF emerged within the context of "enterprise culture" of neoliberalism. "Reproductive freedom in this context is redefined as consumer choice and customer satisfaction," argues Sarah Franklin

(1997:162), therefore turning pregnancy into an achievement. IVF becomes more than a biomedical treatment but also an investment within the bioeconomy for these patients-as-consumers. Part of this is undoubtedly related to law and language. Consider briefly how the law addresses gametes and embryos as a question of "ownership."

Own gametes, own child

In practice, how ownership of donor gametes was navigated was visible often through paperwork and labelling systems. For instance, when a donor came in and oocytes were extracted, the petri dishes and tubes were all labelled under the recipient parents, even prior to fertilisation. A donor medical file was kept in a separate folder, but one that was placed within the commissioning couple's folder. There is an interesting metaphor in these practices. The donor's medical files and information, all the details with the exception of a name (donors are given numbered codes or pseudonyms), are both separate from but enveloped within the couple. Echoing Taylor's (2009) transplanted organ, there is a separation, a distinction, but also the donor is encompassed within the larger couple relationship.

It was easier to deal with gametes than with embryos. Gametes, not donor but "own gametes," are considered in law to belong to the respective person that produced them; that is sperm belonged to the male partner and eggs to the female partner (this is the case with heterosexual partnering) (Regulations, National Health Act 65 of 2003, 2012). In one instance, in a case of frozen, stored sperm from a male partner, the divorcing couple both emailed the clinic on the same day. The man's came first: Change the address and billing details and keep the sperm, he said. Then came the woman's: Destroy the sperm, end the payment. In the discussion among the two embryologists, the senior told the other, tread carefully. But the situation was clear: The sperm belonged to the man. In another case, the clinic staff were planning how to move forward with a case of fertility preservation. A newly married young woman had cancer and wanted to save her oocytes prior to undergoing chemotherapy, which could put her fertility at risk. The physicians and embryologist debated how to proceed. The question was, should they fertilise and then save the embryos, (which have a much better success rate for freezing and subsequent thawing)? But what about the risk that if the relationship goes "pear-shaped" they would have to deal with the issue of what to do with the embryos. In their minds, it was a new marriage and hadn't yet proven its sturdiness. Alternatively, should they freeze the oocytes, which leaves the ownership question clear and the future with more options of who would be the father; yet oocyte freezing was a less regular practice and not as successful as freezing embryos. I was not able to follow up on the eventual decision in this case. However, it is an interesting scenario of different potentialities for the future. What was the likeliness of thawing oocytes versus the likeliness of divorce? Potentialities among medical risks and relationship risks converged in navigating these decisions.

The critical concern regarding ownership was during patient divorces. The impending divorce of a patient spiked intense discussions among embryologists and during staff meetings, and most of the practitioners and health workers expressed their discomfort. It was difficult terrain to navigate, especially for medical professionals, to manage the heightened emotions of a divorcing couple, facing expensive storage costs, and potential children. After one clinic experienced a spate of divorcing couples, doctors asked a lawyer — who was also a patient — to assist in drafting a letter to all divorcing couples. The letter informed both parties that in case of divorce, the embryos would remain frozen and in storage at the clinic (at cost to both parties), until such time as the couple reached consensus about what to do with them. Embryos could be donated, disposed of, or used, but it was key that the clinic had signed consent from both parties agreeing to the path forward. In lieu of such consent, the storage (and costs) would continue. "The embryos only exist within the marriage," said Dr. Webb, "They're jointly owned. Nothing can be done outside of both parties." Another question that arose related to dealing with embryos in the case of death. Do wills consider what to do with the embryos in case of the death of one or both partners? Do the embryos go to family members? Should the clinic discard them?

These are the questions related to ownership of gametes and embryos as they are navigated in law and in clinic life. The questions of ownership, property, and costs thereof remain in an uneasy relationship and tension between the discourses of family and of altruism that pervade the clinic context (and beyond). The next section returns to how building affinities and attachment serves to counter this anxiety over the commodification of potential kin.

Racial tenors to affinity

To avoid the clinic being reduced to a "Pick n Pay," clinics and agencies take on the task of guiding the patients through their choices, highlighting the correspondences that normalise an affinity between recipient and donor. Yet, when describing donor matching and what recipients were looking for, those I spoke with described these processes and desires in distinctly racialized terms. They claimed that each racial category had its own strategy and set of desires that needed to be accommodated. According to matchers, white recipients wanted not only similar phenotype and physical features, high levels of education, but also a host of coinciding traits in personality and interests. Matchers I worked with fielded requests from patients who would wish for an "outdoorsy" donor, or someone who might prefer maths and sciences to humanities.

However, according to those I worked with, not all "race groups" made the same requests when it came to donors, and matchers described the discrete markets they perceived in these terms. The black patients they worked, they said, had little interest in education, and were only concerned with complexion.[135] However, the texture of these opinions varied somewhat. One matcher I met with

---

[135] This is, of course, entirely a stereotype that white clinic staff had constructed and internalized about their black patients.

said that black patients only wanted light-skinned donors. Another said that black patients were uniquely concerned with complexion, but that they wanted a match — light or dark-skinned — with their own skin tone. Light or dark, complexion, the matchers agreed, was all that mattered to black patients. This emphasis on skin tone, the matchers said, contrasted markedly with how they interpreted the desires of their white patients, and how they went about matching these. Indian couples, many said, would ask for donors outside of their race, often requesting white donors; one coordinator explained to me that this was not only because of skin tone, but also because of the "European nose" that was desirable among Indian couples.

The construction of matching as building similarities across all manner of categories — not only looks, but hobbies — rebuilds the links of gamete to donors, bodies, and biography, and its capacity to build attachments for the recipient. This is seen as a counter to the commodification of bodies and their parts and reasserts and relocates the practices of assisted reproductive technologies within their "proper" sphere: Family, love, altruism. I read the stereotypes that matchers described in relation to their views on the "ideal" forms of kinning and the "less ideal" commodification in high tech reproduction. The desires and interests of black families as limited to physical similarity and skin tone is viewed as "crude" and commodifying. This was in contrast with the white clinic staff's depictions of black family life as economically utilitarian. For instance, a matcher fielded an enquiry from an international journalist interested in "Africans" coming to South Africa for donor eggs from white women. The matcher, in turn, explained this to me in terms of "Africans" seeking lighter-skinned children, so that those lighter-skinned children would have enhanced economic opportunities and thus be able to provide the parents with a secure retirement. Thus, the imagination of kinship enacted within the clinic is one in many ways shrouded in whiteness's imagination of itself in relation to the ideal it establishes of family life: Altruism, love, attachment.

Anonymity providing the boundaries of the family

In her monograph on Ecuadorian IVF, Elizabeth Roberts (2012) describes how kinship ties were formed among known donors as extensions of feminine care networks. In contrast to physicians, desires for anonymous gamete donors to keep clear the boundaries of the nuclear, heteronormative family, patients in Ecuador instead wished for known donors within families. This was in direct contrast to the South African situation, where the use of "known donors" (the accepted and widely used term in local clinics) were exceedingly rare. I interviewed only one couple who used a known donor — the recipient's sister. Some clinic staff I asked said the use of known donors occurred only once or twice a year. This was reportedly even less frequent in the case of sperm donation. One embryologist estimated that they had seen only two known sperm donors in their six years at the clinic. At another clinic, I asked a physician, why were known donors so scarce? He said they used known donors, but only if "it's right." "We don't encourage it," he said, "because you really have to manage the future." He mentioned that previous clients had been good friends and now no longer spoke to each other.

Managing the future was the issue. Affordability and the saving that could be realised through the use of known donors did not enter the equation.[136] Simply put, many agreed that known donors, which required the presence of "reproductive others" (Freeman, 2014), made social relations messy. It was feared that they could invoke jealously among sisters. A known donor could potentially alienate the recipient mother if an adult daughter donated. The question of who constituted the "real" parent would become confused through knowing the identity of the donor and being routinely confronted by the presence of that person. The law requires an additional psychological assessment of donors and

---

[136] On the issue of cost, the use of known donors is a more affordable option because recipients do not have to pay donors the prescribed ZAR7000, nor a matching fee to an agency.

recipients participating in known donor situations. Psychologists I interviewed said they checked during these assessments to ensure clarity of social and parenting roles among participants.

Physicians advocated for anonymous gamete donation for reasons similar to those that Roberts (2012) outlines: To keep the relations clear and the boundaries drawn between kin and non-kin. Anonymity is a crucial device employed to maintain the boundaries between kin and non-kin (Klotz, 2014). In my research, most of those moving forward with gamete donation agreed. To those patients, anonymity ensured that boundaries and social roles were clear and that the donor would not question the parental role or kin relations within the family. Anonymity was among the reasons why Judy and Alexander flew from their home in Australia to South Africa for IVF with anonymous donor gametes. I spoke to Judy and Alex later about how they came to be at this clinic in South Africa. After six failed IVF cycles with her own gametes, Judy started to worry that her eggs were no longer viable. They started to consider a donor:

> We started doing a lot of research about [donors], 'cos when we first looked, Alex was like, "Well, I want a child with you." And so, when you then research and it says, even though you get the eggs from someone else, that's only a percentage, so much of the DNA will pass through me anyway 'cos I carry it. Then we started looking into all the scientific evidence of it could, it could still have my mannerisms, have all of the things that are me. Obviously, they're going to have some of the donor's, but we don't know what they are because we don't know her or anything.

Alex's initial hesitation rested upon the notion of genetic kinship, that the substance of genes (or the lack thereof) were reflective of kinship ties. Instead, Judy biologized the labour of pregnancy in so far as she used epigenetic ideas of maternal environments meaning she had more "influence" or that it will be more "her." Any elements that she did not recognize in the resultant child would not be identifiable as a donor "influence" because of anonymity. In this sense, her account bore strong resemblance to those of the practitioners described earlier in the chapter. Alex and Judy first started looking at egg donors in Australia but found that the legislation there required that the donor register with the state and stipulated that the child could know all the identifying information of the donor at the age of 18. Judy said she did not like idea of non-anonymous[137] donation, and was disturbed by the egg donor adverts she read:

> A lot of the profiles of the women in Australia wanted to be a part of the baby's life. We don't want them to have any part. 'Cos that's kind of like, "I know you're doing this but that's pretty much where your role ends." Yeah, playing happy family with [the recipient family] . . . I just don't see how, or why a donor would want that. And the fact that they want to be involved [with the recipient family and child]. It's like, "No, why would you want to do that?" I just don't understand why they would want [to be involved], and that's why I don't think I could [use a non-anonymous donor], me personally. I guess being involved with the baby . . . you know she's given her eggs and you're expected to [have a relationship with this person], I don't know, it's weird.

The lack of anonymity and their perception that Australian donors sought some sort of familiarity with recipient families led Judy and Alex to seek eggs elsewhere. First, they thought about travelling to the United States, but then realised that South Africa was closer and cheaper, had clinics with good reputations (one recommended by their doctor at home), and was a potential holiday destination too. They planned to come for three weeks, return pregnant, and leave it at that; they would never have to report that it was a donor egg or register with the local authorities. The child would be theirs, no questions asked, as no one at home would know.

De-kinning gametes with donors

Psychologists, agency matchers, and doctors expected egg donors to rehearse the idea that their eggs were "waste," previously destined for a toilet (i.e. they would have been a part of menstrual fluid). Donors I observe almost always complied with this idea, repeating it during interviews and screening questions. It was not "their child" that may result; donors were providing mere cells.

> **Marlis:** They told me this time that somewhere between the first and third donation there were twins and they were a boy and a girl. So that means there're two boys and two girls that are out

---

[137] I use the term "non-anonymous" to refer to donation systems where donors register, and the resultant child may look up information about the donor when they are 18 (this is the case in the UK and Australia). This differs from "known donation," where the donor is a friend or family member and known to the recipients prior to the donation process.

> there somewhere. But it [the child] is not mine. I gave an egg and next week the eggs will go down the toilet.

> **Natasha**: I'm losing them [eggs] every month, I might as well take them. They're not my kids, they're just my body.

The psychological assessment undergone by donors was an arena to elicit the discursive devices of de-kinning (Howell, 2003); that is, how kinship is "unmade, cut out and cut off (Edwards, 2014). Clinic staff, patients, and donors used attachment idioms in ways that emphasized the recipient as the "real" mother and not the donor herself. All the donors I interviewed and observed engaged in discursive de-kinning; how they did so varied. Some emphasized the "waste" aspects: That the eggs had no value to them, that they were not being used, that they would otherwise be "flushed down the toilet" (presumably in reference to flushing menstrual blood). Because they had no value for donors (except in their gift form) meant that they had no attachments to the egg cells. Other donors attributed recipients as the "real mother" because of their eventual maternal role, such as pregnancy, changing nappies, and caring for the potential child (see also Almeling, 2014:160). The donors were giving mere cells, while the "real mother" would be pregnant, giving birth, and caring for the child. Their lack of carrying and care-work and use of language highlighting the "insignificance" of their contribution ("It's just a few cells") also served as a discursive device of de-kinning. In the views of gatekeepers, the seeming dis-attachment to eggs equated to a dis-attachment to the potential outcome of those eggs — the potential child.

Gatekeepers explicitly tried to facilitate de-kinning through shifting the "markers of success" from a potential child to that of a successful donation. That is, instead of emphasizing the potential child to which they were contributing genetic material, gatekeepers, and in particular psychologists, sought to emphasise to donors that a successful donation was one where donors came to appointments, took medications on time, followed protocol, and remained healthy (as presumably did their donated eggs). The donation process — and one done properly — was valued; the child itself was a step beyond the donor's purview. Practices in the clinic also contributed to de-linking donors from gametes and imagined children. For instance, all the petri dishes and material from egg aspirations were marked with the names of the receiving couple, not the name of the donor. Within the lab setting, all the files and petri dishes were marked with the couple's name; the donor may have a file, but this would be inside the file of the couple. The gamete cells belonged to the couple from the point of egg retrieval forward.

Conclusion

The anxiety over kinship in the clinic reflects what Ariza (2018) refers to as the "bad potentiality" of assisted reproductive technologies. Tracing the implications of "reproductive others" in the clinic and the management of these others reflects the anxieties related to "improper" family relationships. Simply put, in the clinic, patients and medical staff alike worry about ensuring proper family roles and the possibility that these can be easily confused.

The anxiety over social roles arises from a firm belief in the biological and genetic "truths" providing the basis of kinship ties. Processes such as matching attempt to "socially" reproduce the assumed "biological" or "natural" facts of kinship. Matchers attempt to build attachment between recipients and the imagined child through the proxy of the donor, to whom they seek to have recipients be like, like, and look like; that is, to have shared likeness and affinity. Scientific discourses, such as attachment theory, are used to legitimate these "social facts." In the clinic, knowledge of "biological facts" establish the basis of relatedness through which "social" knowledge of reproductive others operates as to both bring some closer and bring others further apart. Like an archive, the metaphor Jane Taylor uses in her depiction of organ transplant, there is always an "excess" as the social map overlaps the seeming "biological facts." Oftentimes, there is a stubborn refusal to cohere.

Kinning, through the process of building facts and affinities in matching, is further used as a way to distance the clinics from the larger commercial ethos of the fertility industry and the potentiality of the commodification of reproduction. This builds upon an ideology of the family as the locus of social likeness (Ahmed, 2007) from shared values, shared proximities, and shared orientation. The building of affinities serves to reassure this replication of that ideology. In this way, the imagination of the future is instead one of sameness. The imagination of futurity of Others, in contrast, is imagined as economic utilitarian.

Chapter Nine:

Conclusion: Managing the future

> In a given case, how can we know whether a divination practice protects the status quo of desire and power, panders to narcissistic fantasy, preys upon deep fears, or opens human life to different, unexpected, even life-giving potencies? (Ramey 2015:2)

IVF holds a promise. It may be children, happiness, genetic relations, family, or a new social role. The patients I met held diverse potential futures in their minds as they moved forward with IVF. For some, it is the efficacy of scientific progress, the proof of South Africa's social and political transformation, the viability of biomedicine and technologies in Africa. Yet, at the same time, IVF is embedded within structures and legacies of apartheid and colonialism and the profit-making orientation of capitalisms.

An ethnographic examination of potentiality, such as I have done here, reveals the politics, tensions, and complexities of this concept and its articulation in biomedical sites of assisted conception. In examining these various sites of articulation, I have highlighted the way that potentiality works along systems of knowledge as a scope to what matters (for certain futures) and what becomes invisibilized. In "dragging along" political economy, the politics of potentiality operate through regimes both calculative and affective. They operate together in contributing to the commodification of reproductive potentiality, but also the reproduction of certain kinds of families and children, kinds that reiterate old and familiar lines of privilege and power. I theorize the work of powerful actors in fertility clinics as "curature," that is the workings of a kind of "pastoral power" (Rose 2007) that in clinics that reproduces certain forms of racialization. Here, I conclude with a discussions of how potentiality, which resides on an understanding of personhood and human-ness (Taussig, Hoeyer, and Helmreich, 2013), materialises in contexts where colonial and racist systems perpetuate differentiating access to the category of human through the technology of race (Fanon, 1963; Mbembe, 2003; Weheliye, 2014; Erasmus, 2017). I conclude by asking, what ends does IVF serve in Africa? This question I posit in light of the growing industry in assisted conception technologies on the continent. Can we imagine an IVF without the trappings of colonialism, racism, and classism?

On concept work

The majority of this conclusion will address the contributions of this research, but I first wanted to ask a different kind of question. This dissertation sought to understand how the idiom and concept of potentiality emerged and became articulated in different sites within assisted reproductive technologies. Much of the contribution will relate to the concept itself and what an ethnographic understanding of potentiality affords us. But it also has demonstrated in some ways the limits of concepts. Looking at a concept ethnographically compels the question of the limits of concepts and their mobility. At what point do concepts stop becoming helpful? Do they lose their efficacy and usefulness? In this case, can potentiality carry all the various meanings and tasks that I have put forth to it, or does it at some point become an empty signifier?

The question of how we know what we know and what tools we use to know it has been pressing in academia for the last 30 years from a lengthy critique from feminist studies, black studies and postcolonial studies. The question has taken renewed force in recent years, spurned by activists at my university and others asking about colonial histories in the contemporary. In Ann Laura Stoler's *Duress*, she sets out the objective to understand how colonial pasts have rendered "colonial constraints and imperial dispositions [that] have tenacious *presence* in less obvious ways" (2016:4, my italics). How can we understand the way the imperial pasts impinges on the present without recourse to either the obvious or rendering those impacts as mere "traces," as if they don't have a weighty force? In doing so, she also seeks to take on "colonialisms conceptual web" (2016:9), that is the concepts, tools, and theories that we use to understand, make sense of histories, and understands relations between pasts and presents. The concepts we have used may simply not be up to the task at hand, she says, and instead "may be obstacles rather than openings" (2016:5). To this, Stoler suggests the idea of occlusion, which I find similar to my thinking around "scoping" (see below). Occlusion, or to ask what is occluded, is to think through what is left out, what counts as salient, what counts as a "proper" object of inquiry. Occlusions can result from "conceptual habits" (2016:15), that foreclose other modes of thought or modes of inquiry. Instead, she argues for thinking through concepts as provisional, active, and subject to change[138]. With concepts, like pudding (to quote from my professor, Francis Nyamnjoh), the proof is in the eating.

Below, I suggest modest ways to work with the concept of potentiality provisionally, pointing out where its limitations are, and suggesting a handful of new conceptual tools that work within the areas that it does not stretch.

Scoping and curature

One of the central findings in this dissertation has been to show how potentiality "names and frames," or what I call, scoping. New scientific developments and technologies can spatially reorganize the social landscape. The genetic shift in embryology and embryo selection methods contributes to a shift

---

[138] The critique of concepts, viewed often as a kind of distanced thinking away from the musculature of everyday life, has led Sara Ahmed to think with "sweaty concepts" (2017). By "sweaty concepts," Ahmed describes the kind of theoretical work that comes from labour, from life, from bodily experience, and through "the practical experience of coming up against a world, or the practical experience of trying to transform the world" (2017:13-14). Description and observation from living in bodies made to feel unease in this world, and the sweaty labour that results from that position, yields "sweaty concepts."

in the location of blame for reproductive failures. Many anthropologists of IVF have been critical of the way that assisted reproductive technologies often not only intensify surveillance of women's bodies, but also blames them for ART failures (Cussins, 1996; Throsby, 2004). At the same time, this dissertation found that actors put responsibility for success and failure in various corners: Patient participation, but also scientific progress, faith in God, and, simply, luck. But the attribution of responsibility to embryo genetics contributes to an understanding of embryo participation in the making of viability. What I call "agentic embryos" in Section 1 participate further by acting as a locus of responsibility for reproductive failures, while shielding other areas from blame. In attributing failure to embryos, that is, the efficacy of scientific progress, biomedicine, doctors, patients, and God, are not under question. What becomes articulated as potential shifts over time. Further to this, paying attention to the politics of "naming and framing" reveal the scope of potentiality, that is what is in the scope and thus what is also left out or neglected. The second half of this thesis demonstrated ethnographically the workings of scoping in reproducing normative frames of gender and morality, race, and kinship. Through the powerful work of "curature," actors within fertility clinics are able to shape the perpetuation of certain models of gender, race, and kinship through delineations between what matters and what does not. What matters goes on forms, donor applications, drop down menus, and in conversations with matchers; this produces the *matter* of racialization, the elements that make it stable. Scoping, in turn, highlights that this is a particular view, and in doing so points to the constructedness of these normative regimes; it also compels the question, what is left out of this particular naming and particular framing?

The flitting back and forth between different temporalities is described by Adams, Murphy & Clarke as "abduction" (2009:255-256). Indeed, the multiple temporal scales come into play simultaneously in many scenes described in this dissertation. Fear of incest, playing on apartheid-era ideologies of white purity, come into Adrie's framework for decision-making about using a donated embryo, and the future likelihood of inappropriate relations. Colonial gender ideologies of morality and motherhood echo in simple clinic moments, where would-be mothers inject hormones into their bellies, prepping their uteruses for future generations. The colonial and apartheid pasts and the particular hauntings that those systems entrenched shape the anxieties that IVF stokes. The particular location of IVF in South Africa orients the efforts — whether through legal and policy means (in Chapter 7), or "curature" practices in donor matching — to manage unwanted potentialities through the reproduction of certain normalizing regimes. "Curature," I argue, offers a way to think through the relations between history, actors, anxieties, and desires. Matchers here mediate racialization of donors, stabilizing racial categories, and reproducing the biological fictions of race. A certain version of kinship also becomes normalized in clinic practices, bolstered by psychological discourses of attachment theory, to shape relations between would-be parents and their imagined children, through the proxy of the donor. These management practices come in response to the "meaning threatening" potential of IVF. Managing the future means making calculative, rational steps in the present. Managing also means to replicate and reproduce the current normalizing the regimes into a future generation.

Commodification and Capitalization

In Chapter 3, I aligned success rates within what Kathleen Woodward (2009) calls "statistical panic" or "statistical hope." This describes one kind of relation between knowledge and affect. Here, I read potentiality as both calculative and affective. Looking through this lens, I have demonstrated calculative systems of apprehending and framing certain potentialities. These are both effective because of and have the effect of instantiating certain affective states. In their relationship, both parasitic and intertwined, these dual movements perpetuate commodification of reproductive potential. I argue that the IVF clinic's operationalizing of potentiality only works because of the affective authority simultaneous to a calculative regime.[139] This can be seen most clearly in Chapters 3 and 4, where success rates and the "small data" journey offer calculative backing for affective manoeuvres and desires. In Chapter 3, this took the form of "hope management" by medical professionals who use success rates in facilitating patients into rational, individual consumers of healthcare. In Chapter 4, embryo grading and selection procedures provided the scientific languages for embryo trajectories and medical decision-making; yet less visible within these systems is how little investments, financial outlay, and economic capacity to try and try again shape those very trajectories.

It is hard to deconstruct the political-economic terrain and offer a critical look at the commercial system of biomedicine where IVF takes place, when the technology produces children. The moral standing and legitimacy, such as described in Chapter 5, of would-be parents' desires also derives from the image of the child. Liisa Malkki (2015:87) refers to children's images as a form of affective authority in that their image reverberates unwavering innocence and goodness. In the context of humanitarian aid, Malkki argues that the affective authority of children disables aid appeals because of the Western opposition of affect and reason. In contrast to the idea that affect and reason are in opposition to one another, I found that they work in tandem, and in doing so in the fertility clinics, fuel a growing commodification of reproductive potential. The ever-present images of children from the clinic bely the tensions of the ever-present reproductive failures (and financial costs) that take place there. Yet, children's images remain on walls. One embryologist told me once she was concerned that this was "false advertising." "People always like babies."

Queer theorist Lee Edelman (2002) argues that the "figure of the child", which invokes the corporeal manifestation of futurity, serves as the *par excellence* of markers for a certain kind of politics that disciplines the present toward a future for that child's wellbeing, thus invoking capitalism, heternormativity and nuclear families. Toward this future, the figure of the child acts as "an insistence

---

[139] See (Nichols, 2019), who has a similar finding in relation to the first 1000 days in India.

on sameness that intends to restore an Imaginary past" (2002:21). In this way, it compels a reproduction of the social milieu and forecloses critique through sentimentalizing. Part of what makes ARTs (in South Africa) so successful is the promise of sameness. Babies produced via ARTs are just the same as any other babies, conceived via coitus, the message goes. Even with the introduction of third party gametes, every attempt is made by matchers to ensure that the narrative of sameness endures. The normalizing regimes of gender and morality, race, and kinship work not only to prevent unwanted futures, but reproduce and replicate present social landscapes. ARTs in South Africa perpetuate the same (white and racialised Other) bodies, reproducing the notion of difference at the centre of hegemonic racial ideology[140]. Edelman has been critiqued for neglecting racialization in his formulation (see Bliss, 2015). Indeed, a central question of this research has been, what kinds of babies are comprising this affective lure?

Race and potentiality

In his essay "Whiteness and Futurity," Baldwin argues that research on the geographies of whiteness have, by and large, explored racism through unpacking historical genealogies that allow them to take shape in the present. This produces a teleology of racial justice whereby racism is something that *will be* "modernized away" (2011:174) via work in the present that unpacks the past. However, he argues, it neglects how the future is already impinging on the present. In a later essay where he demonstrates his own argument, Baldwin (2012) contends that the figure of the "climate change migrant," a potential figure that *may come* as a result of present inaction on climate change, works in the present as a racialized figure. That is, present-day environmental citizens become racialized as white in relation to the future subjective figure of the black climate change migrant; he describes this as the "potentiality

---

[140] See Schurr (2016) who finds in Mexico ARTs use in fulfilling desires for white(r) bodies.

of race" that produces the alterity of the environmental citizen. Baldwin (2011) argues for an examination of how pre-emptions of the future shape present racialization.

In IVF, what potentialities do the normalizing regimes manage? The kinds of normalizing regimes employed in fertility clinics reproduced kinship via biology and genealogy, parenthood via gendered morality, and race via colonial and apartheid systems of racialization and classification. These normalize certain ways of being in the world, certain ways of forming families, and certain understandings of the social relations among kin. Drawing from Tim Ingold's (2012) analysis of the "genealogical model" of kinship, where he argues that both the genealogical model and the classificatory project are co-constitutive of each other, anthropologist Zimitri Erasmus (2017) contends that genealogical knowing is at the core of colonial constitution and racial taxonomy of humans. What my research found additionally is how clinic staff, in different ways, often acted in gatekeeping roles. From early legislation during the 1980s, where medical doctors were deemed arbiters for patient participation in AID and the selection of donors, to today's designation of psychologists as screening agents for egg donors, "curature" describes one of the ways that "gatekeepers" moderate participation and thus reproductive potentiality. Working in tandem between these normalizing regimes and gatekeepers as powerful actors in the clinic, IVF in its practice in South Africa shapes futures and preclude other forms of futurity. Keeping alive the connections between biology, kinship, and race, this mode of thinking, which is at the core of how IVF works, perpetuates hierarchies that map onto meanings of the human.

Parallel to this theoretical discussion is the growing acknowledgement that sub-Saharan Africa is the next big market for pharmaceutical companies engaged in ARTs (see Allied Market Research, 2019, which describes the continent's growth potential for the IVF market). Gerrits (2015) and Ombelet (2015) argue that ARTs like IVF should be part of a widespread public health programme for treating the dire infertility needs in the continent. While I definitively believe in reproductive justice and that infertility as a health concern needs to be brought to the fore of widespread public initiatives, I cannot help but pause at the implications. In the South African case, "low-cost" IVF is available at public institutions, such as Tygerberg, Groote Schuur, and Pretoria hospitals. In a presentation, Dr Thabo Matsaseng, a leader of the Tygerberg programme, comparing the public to the private system was like "comparing apples to oranges." He used this expression at the SASREG conference to explain the divergence in success rates between the two programmes. While a private clinic may claim to have a 1 in 3 rate of success, the public system may have a 1 in 6 success rate. "But at least it offers them hope," he said. The use of "hope" in that context to me stands as a paltry pittance to reproductive justice. The majority of infertility in the continent is said to arise from issues with fallopian tubes, attributed to untreated or delayed treatment for gynaecological complications and diseases. These are outcomes of poverty and insufficient medical infrastructures. Offering a scenario of "hope," one in which the big pharmaceutical companies are banking on to open up the market in Africa instead of structural change, continues the encroaching markets of biological capitalism under the auspices of alleviating suffering, yet without alleviating the causes of that suffering in the first place. A technological fix to increasingly broader markets of infertile populations does little to detangle those technologies from the coloniality of power through which they emerged.

I came into this research with an understanding of potentiality as ripe for capitalization, as part of promissory bio-capital interventions in the making of life and making life better (Sunder Rajan, 2007; Adams, Murphy, & Clarke, 2009). Particularly in South Africa, research within these fertility clinics undoubtedly represents intervention in spaces of privilege. Indeed, that is, kind of, what I was after. Part of my research interests rested on trying to understand how privilege reproduces itself, both literally and abstractly. I have been inspired by Erasmus's (2017) call for "coming to know *otherwise*" in which current "knowing" the world —via genealogical lines, racialization, and categorical knowledge embedded within coloniality of power — world give way to a politics of love. A politics of love imagines less a future than a present ethic of different kinds of relations. In a critical unpacking of potentiality in IVF, where affective notions of futurity (hope and anxiety), knowledge systems that reproduce colonial and apartheid racial relations, and the affective lure of desired children facilitate capital encroachment into ever deeper and wider areas of life, this dissertation contributes in small ways to identifying the cracks in the present and uneven arrangements of South African social life.

References

AB and Another v Minister of Social Development, 2016. ZACC 43.

"Affinity." Oxford English Dictionary [OED] online. 2018. Oxford, UK: Oxford University Press.

African Network and Registry for Assisted Reproductive Technology [ANARA]. N.d. *Links and sponsorship*. Available http://anara-africa.com/links-sponsor/

Adams, V., Murphy, M. & Clarke, A.E. 2009. Anticipation: Technoscience, life, affect, temporality. *Subjectivity*. 28(1):246-265.

Ahmed, S. 2007. A phenomenology of whiteness. *Feminist Theory*. 8(2):149-168.

Ahmed, S. 2010. *The Promise of Happiness*. Durham: Duke University Press.

Ahmed, S. 2017. *Living a Feminist Life*. Durham, USA: Duke University Press.

Al Jazeera English. 2015. *South African doctor develops cheaper IVF treatment* [video file]. Available https://www.youtube.com/watch?v=Jn4yVo_SxY8

Allen, J.S. & Jobson, R.C. 2016. The decolonizing generation: (Race and) theory in Anthropology since the Eighties. *Current Anthropology*. 57(2):129-148.

Allied Market Research. 2019. *IVF Services Market Outlook – 2026*. April. Available https://www.alliedmarketresearch.com/IVF-in-vitro-fertilization-services-market

Almeling, R. 2006. "Why do you want to be a donor?": Gender and the production of altruism in egg and sperm donation. *New Genetics and Society*. 25(2):143-157.

Almeling, R. 2014. Defining connections: gender and perceptions of relatedness in egg and sperm donation. In T. Freeman, S. Graham, F. Ebtehaj & M. Richards. *Relatedness in Assisted Reproduction: Families, Origins and Identities.* Cambridge, UK: Cambridge University Press. 147-161.

Amadiume, I. 2005. Theorizing matriarchy in Africa: Kinship ideologies and systems in Africa and Europe. In *African Gender Studies A Reader*. O. Oyˇwùmí, Ed. New York: Palgrave Macmillan. 83-98.

Anderson, W. 2009. From subjugated knowledge to conjugated subjects: Science and globalisation, or postcolonial studies of science? *Postcolonial Studies*. 12(4):389-400.

Anderson, W. 2002. Introduction: Postcolonial technoscience. *Social Studies of Science*. 32(5-6):643-658.

Anthropology Southern Africa. 2005. Ethical guidelines and principles of conduct for anthropologists. *Anthropology Southern Africa*. 28(3&4): 142-143.

Ariza, L. 2015. Keeping up appearances in the Argentine fertility clinic. Making kinship visible through race in donor conception. *TECNOSCIENZA: Italian Journal of Science & Technology*. 6(1):5-31.

Ariza, L. 2018. Risky mixings: Unravelling gametes' bad potential in Argentina. *TECNOSCIENZA: Italian Journal of Science & Technology*. 9(1):49-78

Asberg, C. 2010. Enter cyborg: Tracing the historiography and ontological turn of feminist technoscience studies. *International Journal of Feminist Technoscience*. 1(1):1-25.

Association for Social Anthropology. 1999. Ethical Guidelines for Good Research Practice. London: ASA.

Ataguba, J.E.-O. & Alaba, O. 2012. Explaining health inequalities in South Africa: A political economy perspective. *Development Southern Africa*. 29(5):756-764.

Badenhorst, L.T. & Higgins, E. 1962. Fecundity of white women in Johannesburg. *Population Studies*, 15(3):279-290.

Baldwin, A. 2011. Whiteness and futurity. *Progress in Human Geography*, 36(2):172–187.

Baldwin, A. 2012. Orientalising environmental citizenship: climate change, migration and the potentiality of race. *Citizenship Studies*. 16(5-6):625–640.

Bamford, S. & Leach, J. Introduction: Pedigrees of knowledge: Anthropology and the genealogical method. In *Kinship and Beyond: The Genealogical Model Reconsidered*. S. Bamford and J. Leach, Eds. 1-23.

Banerjee, A. 2014. Race and a transnational reproductive caste system: Indian transnational surrogacy. *Hypatia*. 29(1):113-128.

Bärnreuther, S. 2015. Innovations "Out of Place:" Controversies over IVF beginnings in India between 1978 and 2005. *Medical Anthropology*. 35(1):73-89.

Battersby, J. 1987. South African woman gives birth to 3 grandchildren, and history. *The New York Times*. October 2: 1.

Becker, G. 2000. *The Elusive Embryo: How Women and Men Approach New Reproductive Technologies*. Berkeley, CA: University of California Press.

Becker, G. & Nachtigall, R.D. 1992. Eager for medicalization: The social production of infertility as a disease. *Sociology of Health & Illness*. 14(4):456-471.

Becker, G., Butler, A. & Nachtigall, R.D. 2005. Resemblance talk: A challenge for parents whose children were conceived with donor gametes in the US. *Social Science & Medicine*. 61(6):1300-1309.

Bell, A.V. 2009. "It's way out of my league:" Low-income women's experiences of medicalized infertility. *Gender & Society*. 23(5):688-709.

Bell, J. 1978. SA donor debate. *Weekend Argus*. March18: 4.

Bellver, J. 2014. Impact of bodyweight and lifestyle on IVF outcome. *Expert Review of Obstetrics & Gynecology*. 3(5):607-625.

Bergh, C. 2005. Single embryo transfer: a mini-review. *Human Reproduction*. 20(2):323–327.

Bergmann, S. 2011. Fertility tourism: Circumventive routes that enable access to reproductive technologies and substances. *Signs Journal of Women in Culture and Society*. 36(2):280-289.

Bergmann, S. 2012. Resemblance that matters: On transnational anonymized egg donation in two European IVF clinics. In *Reproductive Technologies as Global Form. Ethnographies of Knowledge, Practices, and Transnational Encounters*. M. Knecht, M. Klotz, and S. Beck, Eds. 331-355.

Bergmann, S. 2015. Assisted authenticity: Naturalisation, regulation and the enactment of "race" through donor matching. In *(In)fertile Citizens: Anthropological and Legal Challenges of ART Technologies*. V. Kantsa, G. Zanini, and L. Papadopoulou, Eds. (In)FERCIT. 231-246.

Bestard, J. 1999. Kinship and the new genetics. The changing meaning of biogenetic substance. *Social Anthropology*. 12(3):253-263.

Bharadwaj, A. 2006. Sacred conceptions: Clinical theodicies, uncertain science, and technologies of procreation in India. *Culture, Medicine and Psychiatry*. 30(4):451-465.

Bharadwaj, A. 2011. Reproductive viability and the state: Embryonic stem cell research in India. In *Reproduction, globalization, and the state: new theoretical and ethnographic perspectives*. C. F. Sargent & C. H. Browner, Eds. Durham, USA: Duke University Press. 1–10.

Bharadwaj, A. 2016. *Conceptions: Infertility and Procreative Technologies in India*. London: Berghahn Books.

Birenbaum-Carmeli, D. 2009. The politics of "The Natural Family" in Israel: State policy and kinship ideologies. *Social Science & Medicine*. 69(7):1018-1024.

Bliss, J. 2015. Hope Against Hope: Queer Negativity, Black Feminist Theorizing, and Reproduction without Futurity. *Mosaic: a journal for the interdisciplinary study of literature*. 48(1):83–98.

Block, E. 2014. Flexible kinship: Caring for AIDS orphans in rural Lesotho. *Journal of the Royal Anthropological Institute*. 20:711-727.

Blyth, E. 1998. Donor assisted conception and donor offspring rights to genetic origins information. *The International Journal of Children's Rights*. 6:237-253.

Boivin, J., Bunting, L., Collins, J.A., & Nygren,. K.G. 2007. International estimates of infertility prevalence and treatment-seeking: Potential need and demand for infertility medical care. *Human Reproduction*. 22(6):1506-1512.

Boonzaier, E., Skalnik, P., Thornton, R., & West, M. 2008. Review discussion. *Social Dynamics*. 11(2):65–71.

Bos-Mikich, A., Mattos, A. & Ferrari, A.N. 2001. Early cleavage of human embryos: an effective method for predicting successful IVF/ICSI outcome. *Human Reproduction*. 16(12):2658–2661.

Boue J, Bou A, Lazar P. 1975. Retrospective and prospective epidemiological studies of 1500 karyotyped spontaneous human abortions. *Teratology*. 12:11-26.

Bowker, G.C. & Star, S.L. 2000. *Sorting things out: Classification and its consequences*. Cambridge, MA: MIT Press.

Braff, L.R. 2010. *Reconceiving Personhood: The Localization of Assisted Reproductive Technologies in Mexico City*. Chicago: University of Chicago Press.

Braude, P. 2013. Selecting the "best" embryos: Prospects for improvement. *Reproductive BioMedicine Online*. 27(6):644-653.

Breckenridge, K. 2014. *Biometric state*. Cambridge, UK: Cambridge University Press.

Briggs, L. 2010. Reproductive technology: Of labor and markets. *Feminist Studies*. 36(2):359-374.

Brink, E. 1990. Man-made women: Gender, class and the ideology of the "volksmoeder." In *Women and Gender in Southern Africa to 1945*. C. Walker, Ed. Cape Town & London: David Philip, James Currey. 273-292.

Brits, E. 2004a. "Koop my eiersel." *Die Burger*. April 21:1.

Brits, E. 2004b. Dertig buitlandse pare kies al eierselle van slim Suid-Afrikaners. *Die Burger*. April 22:1.

Brits, E. 2004c. Wet sê skenkers het geen reg op ouerskap. *Die Burger*. April 22:2.

Brokensha, S. 1989. *Psychological Discourse and the "New" Reproductive Technologies: A Critical Analysis*. University of Cape Town.

Brophy, M. 2019. Shadowing Afrikaner Nationalism: Jungian archetypes, incest, and the uncanny in Marlene van Niekerk's Triomf. *Journal of Literary Studies*. 22(1-2):96-112.

Brown, B.B. 1987. Facing the "Black Peril:" The politics of population control in South Africa. *Journal of Southern African Studies*. 13(2):256-273.

Brown, N. 2005. Shifting Tenses: Reconnecting Regimes of Truth and Hope. *Configurations*. 13(3):331–355.

Buis-babas: Tegniek en etiek die kwelpunt. 1978. *Die Vaderland* (South Africa). 26 July:9.

Burman, S. 1992. The category of the illegitimate in South Africa. In *Questionable Issue: Illegitimacy in South Africa*. S. Burman and E. Preston-Whyte, Eds. Oxford, UK: Oxford University Press. 21-35.

Burns, C. 2004. Controlling birth: Johannesburg, 1920-1960. *South African Historical Journal*. 50(1):170–198.

Caldwell, J.C. & Caldwell, P. 1993. The South African fertility decline. *Population and Development Review*. 19(2):225-262.

Carsten, J. 2003. *After Kinship*. Cambridge, UK: Cambridge University Press.

Casini, M.L., Rossi, F., Agostini, R., & Unfer, V. 2009. Effects of the position of fibroids on fertility. *Gynecological Endocrinology*. 22(2):106–109.

Celik, S. et al. 2018. The effect of the pooling method on the live birth rate in poor ovarian responders according to the Bologna criteria. *Turkish Journal of Obstetrics and Gynecology*. 15:39–45.

Check, J.H. & Katsoff, D. 1993. A prospective study to evaluate the efficacy of modified swim-up preparation for male sex selection. *Human Reproduction*. 8(2):211-214.

Chidester, D. 1992. The politics of exclusion: Christian image of illegitimacy. In *Questionable Issue: Illegitimacy in South Africa*. S. Burman and E. Preston-Whyte, Eds. Oxford, UK: Oxford University Press. 145-170.

Children's Act, No. 38 of 2005. 2005. *Government Gazette*. 9256(33076). April 1. General notice no. 12. Pretoria: Government Printer.

Children's Status Act, No. 82 of 1987. 1987. *Government Gazette*. 268(10974). October 14. General notice no. 2295. Pretoria: Government Printer.

Chimere-Dan, O. 1993. Population policy in South Africa. *Studies in Family Planning*. 24(1):31-39.

Christakis, N.A. 1999. Prognostication and bioethics. *Daedalus*. 128(4):197-214.

Clifford, J. 1986, Introduction: Partial Truths. In J. Clifford and G.E. Marcus, Eds. *Writing Culture: The Poetics and Politics of Ethnography*. Berkeley: University of California Press. 1–27.

Coetzee, A. and Kruger, J. 2004. Die Afrikaanse verkleinwoord 1: 'n Morfo-semantiese grammatika. *Journal for Language Teaching*. 38(2):316-331.

Cohen, D. 2016. "No solid evidence" for IVF add-on success. *BBC News*. November 28. Available https://www.bbc.com/news/health-38094618

Cohen, L. 2006. 'Egg brokers' help bring infertile women, possible donors together. *Weekend Post* (Port Elizabeth). 25 August:6.

Cohen, M. 1980. How we grow — and experts now know more. *The Citizen*. May17:7.

Colebrook, C. 2008. Agamben: Aesthetics, potentiality, and life. *South Atlantic Quarterly*. 107(1):107-120.

Colen, S. 1990. “Housekeeping for the Green Card: West Indian Household Workers, the State, and Stratified Reproduction in New York.” In R. Sanjek & S. Colen, Eds. *At Work in Homes 3*. Washington, D.C.: American Anthropological Association Monographs. 89–118.

Colen, S. 1995. Like a mother to them: Stratified reproduction and West Indian childcare workers and employers in New York. In. F. D. Ginsburg & R. Rapp, Eds. *Conceiving the New World Order: The Global Politics of Reproduction*. Berkeley, CA: University of California Press. 78–102.

Colvin, C.J., Robins, S. & Leavens, J. 2010. Grounding “Responsibilisation Talk:” Masculinities, citizenship and HIV in Cape Town, South Africa. *Journal of Development Studies*. 46(7):1179-1195.

Comaroff, J. & Comaroff, J.L. 2006. Figuring Crime. *Public Culture*. 18(1):209-246.

Conrad, P. 1992. Medicalization and social control. *Annual Review of Sociology*. (18):209-232.

Coovadia, H., Jewkes, R., Barron, P., Sanders, D. & McIntyre, D. 2009. The health and health system of South Africa: Historical roots of current public health challenges. *The Lancet*. 374(9692):817-834.

Corea, G. 1985. *The Mother Machine*. New York: Harper & Row.

Crapanzano, V. 1985. *Waiting: The Whites of South Africa*. New York: Random House.

Cromer, R. 2009. Embryonic properties and fetal frontiers: Potential life in US property law. *Revista Română de Sociologie*. 20(5-6):385–407.

Cromer, R. 2018. Saving embryos in stem cell science and embryo adoption. *New Genetics and Society*. 37(4):362-386.

Cummins, J.M., Breen, T.M., Harrison, K.L., Shaw, J.M., Wilson, L.M. & Hennessey, J.F. 1986. A formula for scoring human embryo growth rates in in vitro fertilization: Its value in predicting pregnancy and in comparison with visual estimates of embryo quality. *Journal of in Vitro Fertilization and Embryo Transfer*. 3(5):1-12.

Cussins, C. 1996. Ontological choreography: Agency through objectification in infertility clinics. *Social Studies of Science*. 26(3):575-610.

Dados, N. and Connell, R. 2012. The Global South. *Contexts*. 11(1):12–13.

Daniels, C.R. & Heidt-Forsythe, E. 2012. Gendered eugenics and the problematic of free market reproductive technologies: Sperm and egg donation in the United States. *Signs Journal of Women in Culture and Society*. 37(3):719-747.

da Costa Santos, G.G. 2019. Decriminalising homosexuality in Africa: Lessons from the South African experience. In *Human Rights, Sexual Orientation and Gender Identity in The Commonwealth*. C. Lennox and M. Waites, Eds. London: Institute of Commonwealth Studies. 313-337.

Davis, D.A. 2009. The politics of reproduction: The troubling case of Nadya Suleman and Assisted Reproductive Technology. *Transforming Anthropology*. 17(2):105-116.

Davis, F.J. 1991. *Who is Black? One Nation's Definition*. University Park, PA: Penn State University Press.

De Geyter, C., Calhaz-Jorge, C., Kupka, M.S., Wyns, C., Mocanu, E., Motrenko, T., Scaravelli, G., et al. 2018. ART in Europe, 2014: results generated from European registries by ESHRE. *Human Reproduction*. 33(9): 1586–1601.

Delvigne, A. & Rozenberg, S. 2002. Epidemiology and prevention of ovarian hyperstimulation syndrome (OHSS): A review. *Human Reproduction Update*. 8(6):559-577.

Dennison, M. 2007. Revealing your sources: The case for non-anonymous gamete donation. *Journal of Law and Health*. 21(1):1-29.

Deomampo, D. 2019. Racialized commodities: Race and value in human egg donation. *Medical Anthropology*. 00(00):1-14.

Deomampo, D. 2016a. Race, nation, and the production of intimacy: Transnational ova donation in India. *Positions*. 24(1):303-332.

Deomampo, D. 2016b. *Transnational Reproduction: Race, Kinship and Commercial Surrogacy in India*. New York: New York University Press.

Deomampo, D. 2015. Defining parents, making citizens: Nationality and citizenship in transnational surrogacy. *Medical Anthropology*. 34(3):210-225.

Deomampo, D. 2013. Gendered geographies of reproductive tourism. *Gender & Society*. 27(4):514-537.

Department of Health, Welfare, and Pensions. 1981. Artificial insemination by donor (AID) Codes of Practice. Pretoria: Department of Health, Welfare, and Pensions.

De Saille, S. 2017. *Knowledge as Resistance: The Feminist International Network of Resistance to Reproductive and Genetic Engineering*. London: Palgrave Macmillan.

Dhai, A. 2014. Limiting donor conceptions to six: Time for change. *South African Journal of Bioethics & Law*. 7(1):2-3.

DiCaglio, S. 2016. Staging embryos. *Body & Society*. 23(2):3-24.

Dixon, J. 2015. Protocol and beyond: practices of care during a Tuberculosis vaccine clinical trial in South Africa. *Anthropology Southern Africa*. 35(1-2):40–48.

Documentary tackles infertility stigma. 2018. *South African Broadcasting Corporation* [SABC]. August 26. Available http://www.sabcnews.com/sabcnews/documentary-tackles-infertility-stigma/

Dokras, A., Sargent, I.L. & Barlow, D.H. 1993. Human blastocyst grading: An indicator of developmental potential? *Human Reproduction*. 8(12):2119-2127.

Draft Bill on Surrogate Motherhood. 1995. *Government Gazette*. 16479. 14 June. General notice no. 512. Pretoria: Government Printer.

Dubow, S. 1995. *Scientific Racism in Modern South Africa*. Cambridge, UK: Cambridge University Press.

Duster, T. 2003. *Backdoor to Eugenics*. 2nd edition. New York: Routledge.

Dyer, S.J. 2004. "You are a man because you have children:" Experiences, reproductive health knowledge and treatment-seeking behaviour among men suffering from couple infertility in South Africa. *Human Reproduction*. 19(4):960-967.

Dyer, S.J. 2008. Infertility in African countries: Challenges created by the HIV epidemic. *ESHRE Monographs*. (1):48-53.

Dyer, S.J. 2009. International estimates on infertility prevalence and treatment seeking: Potential need and demand for medical care. *Human Reproduction*. 24(9):2379-2380.

Dyer, S.J., Sherwood, K., McIntyre, D. & Ataguba, J.E. 2013. Catastrophic payment for assisted reproduction techniques with conventional ovarian stimulation in the public health sector of South Africa: Frequency and coping strategies. *Human Reproduction*. 28(10):2755-2764.

Edwards, J. 2004. Incorporating incest: Gamete, body and relation in assisted conception. *The Journal of the Royal Anthropological Institute*. 10(4):755-774.

Erasmus, Y. & Ellison, G. 2008. What can we learn about the meaning of race from the classification of population groups during apartheid? *South African Journal of Science*. 104(11-12):450-452.

Erasmus, Z. 2008. Race. In *New South African Keywords*. N. Shepherd and S. Robins, Eds. Johannesburg: Jacana. 178-190.

Erasmus, Z. 2017. *Race Otherwise: Forging a New Humanism for South Africa*. Johannesburg: Wits University Press.

Ericksen, K. & Brunette, T. 1996. Patterns and predictors of infertility among African women: A cross-national survey of twenty-seven nations. *Social Science & Medicine*. 42(2):209-220.

Erikson, S.L. 2012. Global health business: The production and performativity of statistics in Sierra Leone and Germany. *Medical Anthropology*. 31(4):367-384.

ESHRE Special Interest Group of Embryology and Alpha Scientists in Reproductive Medicine, 2017. The Vienna consensus: Report of an expert meeting on the development of ART laboratory performance indicators. *Reproductive BioMedicine Online*. 35(5):494-510.

ESHRE Task Force on Ethics and Law, 2003. 6. Ethical issues related to multiple pregnancies in medically assisted procreation. *Human Reproduction*. 18(9):1976-1979.

ESHRE Task Force on Ethics and Law, 2002. III. Gamete and embryo donation. *Human Reproduction*. 17(5):1407-1408.

Falkof, N. 2016. *Satanism and Family Murder in Late Apartheid South Africa: Imagining the End of Whiteness*. New York: Palgrave MacMillan.

Faill, B. 1978. No test-tube babies are planned for SA yet. *The Natal Mercury* (Durban). 14 July:16.

Fanon, F. 1963. *The Wretched of the Earth*. New York: Grove Press.

Faria, I. 2018. Therapeutic navigations and social networking: Mozambican women's quests for fertility. *Medical Anthropology*. 37(4):343-357.

Fishel, S., Dowell, K. and Thornton, S. 2000. Reproductive possibilities for infertile couples: present and future. In G.R. Bentley & C.G.N. Mascie-Taylor, Eds. *Infertility in the modern world: Present and future prospects*. Cambridge, UK: Cambridge University Press. 17-41.

Foucault, M. 1978. *The History of Sexuality, Vol. I. An Introduction.* Trans. Robert Hurley. New York: Random House.

Fourie, P.J., Ed. 2007. *Media Studies: Institutions, Theories, and Issues.* Cape Town: Juta Education.

Fourie, F.L.R., Botes, A. & Van der Merwe, J.P. 1988. Cost analysis study of an in vitro fertilisation programme. *South African Medical Journal.* 73:120-122.

Fox, D. 2008. Paying for particulars in people-to-be: Commercialisation, commodification and commensurability in human reproduction. *Journal of Medical Ethics*. 34(3):162-166.

Frankenberg, R. 1997. Introduction: Local whiteness, localizing whiteness. In R. Frankenberg, Ed. *Displacing Whiteness: Essays in Social and Cultural Criticism*. Durham, NC: Duke University Press. 1-33.

Franklin, S. 2013. *Biological Relatives: IVF, Stem Cells, and the Future of Kinship*. Durham, NC: Duke University Press.

Franklin, S. 2006a. The Cyborg Embryo: Our path to transbiology. *Theory, Culture & Society*. 23(7-8):167-187.

Franklin, S. 2006b. Mapping biocapital: new frontiers of bioprospecting. *cultural geographies*. 13(2):301–304.

Franklin, S. 1997. *Embodied Progress: A Cultural Account of Assisted Conception*. New York: Routledge.

Franklin, S. & Inhorn, M.C. 2016. Introduction. *Reproductive BioMedicine and Society Online*. 2(C):1-7.

Franklin, S. & McKinnon, S. 2001. *Relative Values: Reconfiguring Kinship Studies.* Durham, NC: Duke University Press.

Franzblau, S.H. 1999. II. Historicizing Attachment Theory: Binding the ties that bind. *Feminism & Psychology*. 9(1):22-31.

Freeman, T. 2014. Introduction. In *Relatedness in Assisted Reproduction: Families, Origins and Identities*. T. Freeman, S. Graham, F. Ebtehaj and M. Richards, Eds. Cambridge, UK: Cambridge University Press. 1-20.

Gammeltoft, T.M. 2013. Potentiality and human temporality. *Current Anthropology*. 54(S7):S159-S171.

Gammeltoft, T.M. 2014. *Haunting Images: A Cultural Account of Selective Reproductive in Vietnam*. Berkeley, CA: University of California Press.

Garbett, S. 1979. "It is being done undercover:" AID — an African offense? *The Star* (Johannesburg, SA). 16 August:12.

Garbett, S. 1980. Need for sperm bank. *The Star* (Johannesburg, SA). 18 April:9.

Gardner, D.K. & Schoolcraft, W.B. 1999. In vitro culture of human blastocysts. In: R. Jansen & D. Mortimer, Eds. *Towards reproductive certainty: fertility and genetics beyond*. The plenary proceedings of the 11th World Congress on In Vitro Fertilization & Human Reproductive Genetics. Pearl River, NY: Parthenon. 378–88.

Gennari, A. et al., 2015. Breast cancer incidence after hormonal treatments for infertility: systematic review and meta-analysis of population-based studies. *Breast Cancer Research and Treatment*, 150(2):405–413.

Gerrits, T. 2015. Introduction: ARTs in resource-poor areas: practices, experiences, challenges, and theoretical debates. In K. Hampshire & B. Simpson, Eds. *Assisted Reproductive Technologies in the Third Phase: Global Encounters and Emerging Moral Worlds*. New York: Berghahn.94-104.

Gerrits, T. 2016. Assisted reproductive technologies in Ghana: transnational undertakings, local practices and "more affordable" IVF. *Reproductive BioMedicine and Society Online*. 2(C):32–38.

Gibbon, S. 2013. Ancestry, Temporality, and Potentiality: Engaging Cancer Genetics in Southern Brazil. *Current Anthropology*, 54(S7):S107–S117.

Gilboa, D. et al., 2019. Assisted reproductive technology and the risk of pediatric cancer: A population-based study and a systematic review and meta-analysis. *Cancer Epidemiology*, 63: 101613-101618.

Glaser, C. 2010. Portuguese Immigrant History in Twentieth Century South Africa: A Preliminary Overview. *African Historical Review*. 42(2): 61–83.

Gleicher, N., Vidali, A., Braverman, J., Kushnir, V.A., Barad, D.H., Hudson, C., Wu, Y.G., Wang, Q., Zhang, L. & Albertini, D.F. 2016. Accuracy of preimplantation genetic screening (PGS) is compromised by degree of mosaicism of human embryos. *Reproductive Biology and Endocrinology*. 14(1):1-7.

Gooldin, S. 2013. `Emotional rights', moral reasoning, and Jewish-Arab alliances in the regulation of in-vitro-fertilization in Israel: Theorizing the unexpected consequences of assisted reproductive technologies. *Social Science & Medicine*, 83(C):90–98.

Grandview Research. 2019. IVF Market Size Worth $36.2 Billion By 2026 | CAGR: 10.2%. March. Available at https://www.grandviewresearch.com/press-release/global-ivf-market

Greco, E. & Minasi, M.G. 2015. Health babies after intrauterine transfer of mosaic aneuploid blastocysts. *New England Journal of Medicine*. 373(21):2087-2089.

Greil, A.L. & McQuillan, J. 2010. "Trying" times: Medicalization, intent, and ambiguity in the definition of infertility. *Medical Anthropology Quarterly*. 24(2):137-156.

Hacking, I. 1982. Biopower and the avalanche of printed numbers. *Humanities in Society*. 5:279-295.

Hacking, I. 1990. *The Taming of Chance*. Cambridge, UK: Cambridge University Press.

Hacking, I. 2002. *Historical Ontology*. Cambridge, MA: Harvard University Press.

Hamilton, C. & Skotnes, P. 2014. Uncertain curature: In and out of the archive. In C. Hamilton & P. Skotnes, Eds. *Uncertain Curature*. Cape Town, SA: Jacana Media. 1-23.

Hampshire, K. & Simpson, B. 2015. *Assisted Reproductive Technologies in the Third Phase: Global Encounters and Emerging Moral Worlds*. London: Berghahn Books.

Hansen, M. et al., 2002. The risk of major birth defects after intracytoplasmic sperm injection and in vitro fertilization. *New England Journal of Medicine*, 346(10):725–730.

Haraway, D.J. 1991. *Simians, Cyborgs, and Women: The Reinvention of Nature*. New York: Routledge.

Haraway, D.J. 1997. *Modest_Witness@ Second_Millennium. FemaleMan_Meets_OncoMouse: Feminism and Technoscience*. New York: Routledge.

Harding, S. 2008. *Sciences from Below*. Durham, NC: Duke University Press.

Hargreave, M. et al., 2019. Association Between Fertility Treatment and Cancer Risk in Children. *JAMA*. 322(22): 2203–8.

Harper, J., Coonen, E., De Rycke, M., Fiorentino, F., Geraedts, J., Goossens, V., Harton, G., Moutou, C., et al. 2010. What next for preimplantation genetic screening (PGS)? A position statement from the ESHRE PGD Consortium Steering Committee. *Human Reproduction*. 25(4):821-823.

Harrison, F., McGranahan, C., Roland, K. & Williams, B.C. 2016. Decolonizing anthropology: A conversation with Faye V. Harrison, Part I. *Savage Minds*. May 2. Available: https://savageminds.org/2016/05/02/decolonizing-anthropology-a-conversation-with-faye-v-harrison-part-i/

Hartnack, A. 2013. On gaining access: A response to Francis Nyamnjoh's "Blinded by Sight: Divining the Future of Anthropology in Africa." *Africa Spectrum*:107-112.

Haylett, J. 2012. One Woman Helping Another: Egg Donation as a Case of Relational Work. *Politics & Society*. 40(2):223–247.

Helgason, A. & Palsson, G. 1997. Contested commodities: The moral landscape of Modernist regimes. *The Journal of the Royal Anthropological Institute*. 3(3):451-471.

Helmreich, S. 2008. Species of biocapital. *Science as Culture*. 17(4):463-478.

Helosvuori, E. 2018. Assembling viability: The art of mundane embryo selection in IVF. *BioSocieties*. 14(1):1-22.

Heng, B.C. 2007. Legal and ethical issues in the international transaction of donor sperm and eggs. *Journal of Assisted Reproduction and Genetics*. 24(4):107-109.

Henkes, B. 2016. Shifting Identifications in Dutch-South African Migration Policies (1910–1961). *South African Historical Journal*. 68(4):641–669.

Heyns, J. 1978. Voorplanting kom uit liefde. *Die Oggenblad* (South Africa). 6.

Higginson, F. 1984a. Test tube babies: What the churches say. *The Star* (Johannesburg, SA). 18 July:3.

Higginson, F. 1984b. Test tube babies: The moral dilemma. *The Star* (Johannesburg, SA). 19 July:3.

Hoffenberg, R. 2001. Christiaan Barnard: His first transplants and their impact on concepts of death. *BMJ*. 323(7327):1478-1480.

Holland, S. 2001. Contested commodities at both ends of life: Buying and selling gametes, embryos, and body tissues. *Kennedy Institute of Ethics Journal*. 11(3):263-284.

Homanen, R. 2018. Reproducing whiteness and enacting kin in the Nordic context of transnational egg donation: Matching donors with cross-border traveller recipients in Finland. *Social Science & Medicine*. 203:28-34.

Homer, H.A., Li, T.-C. & Cooke, I.D. 2000. The septate uterus: a review of management and reproductive outcome. *Fertility and Sterility*. 73(1):1–14.

Hörbst, V. 2015. A child cannot be bought? Economies of hope and failure when using ARTs in Mali. In. K. Hampshire & B. Simpson, Eds. *Assisted Reproduction in the Third Phase: Global Encounters and Emerging Moral Worlds*. New York: Berghahn.152-170.

Hörbst, V. & Wolf, A. 2014. ARVs and ARTs: Medicoscapes and the unequal place-making for biomedical treatments in sub-Saharan Africa. *Medical Anthropology Quarterly*. 28(2):182-202.

Howell, S. 2003. Kinning: The creation of life trajectories in transnational adoptive families. *Journal of the Royal Anthropological Institute*. 9:465-484.

Hospital freezes human embryo. 1985. *Cape Times.* (Cape Town, SA). 28 February:1.

Human Fertilisation & Embryology Authority. 2019. Treatment Add-Ons. London. Available https://www.hfea.gov.uk/treatments/explore-all-treatments/treatment-add-ons/

Human Tissues Act, No. 65 of 1983. 1983. *Government Gazette.* 216(8734). June 1. Government notice no. 1162. Pretoria: Government Printer.

Humphrey, M. & Humphrey, H. 1986. A fresh look at genealogical bewilderment. *British Journal of Medical Psychology.* 59:133-140.

Huyser, C. & Boyd, L. 2013. ART in South Africa: The price to pay. *Facts, views vision in ObGyn.* 5(2):91-99.

Ikemoto, L.C. 1996. The in/fertile, the too fertile, and the dysfertile. *Hastings Law Journal.* 47(4):1007-1061.

Ikemoto, L.C. 2009a. Eggs as capital: Human egg procurement in the fertility industry and the stem cell research enterprise. *Signs Journal of Women in Culture and Society.* 34(4):763-781.

Ikemoto, L.C. 2009b. Reproductive tourism: Equality concerns in the global market for fertility services. *Law Inequality, A Journal of Theory and Practice.* 27(2):277-309.

Infertility Awareness Association of South Africa [IFAASA]. 2016. Our Sponsors. November 26. Available https://ifaasa.co.za/category/sponsors/

Ingold, T. 2012. Stories against classification: Transport, wayfaring and the integration of knowledge. In *Kinship and Beyond: The Genealogical Model Reconsidered.* S. Bamford and J. Leach, eds. New York: Berghahn Books. 193–213.

Inhorn, M.C. 1994. *Quest for Conception: Gender, Infertility, and Egyptian Medical Traditions.* Philadelphia: University of Pennsylvania Press.

Inhorn, M.C. 2002. *Local Babies, Global Science: Gender, Religion and In Vitro Fertilization in Egypt.* New York: Routledge.

Inhorn, M.C. 2012. *The New Arab Man: Emergent Masculinities, Technologies, and Islam in the Middle East.* Princeton, NJ: Princeton University Press.

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

Inhorn, M.C. & Birenbaum-Carmeli, D. 2008. Assisted reproductive technologies and culture change. *Annual Review of Anthropology.* 37(1):177-196.

Inhorn, M.C. & Gürtin, Z.B. 2011. Cross-border reproductive care: A future research agenda. *Reproductive BioMedicine Online.* 23(5):665-676.

Inhorn, M.C. & Patrizio, P. 2014. Procreative tourism: Debating the meaning of cross-border reproductive care in the 21st century. *Expert Review of Obstetrics & Gynecology*. 7(6):509-511.

Iraurgui, L., Ayerdi, F., Ferrando, M., Quintana, F. & Larreategui, Z. 2016. Inner cell mass and trophectoderm quality as predictive parameters of pregnancy and implantation. *Fertility and Sterility*. 106(Supplement):e209-e210.

Ivry, T. 2014. The Pregnancy Manifesto: Notes on how to extract reproduction from the petri dish. *Medical Anthropology*. 34(3):274-289.

Jain, S.L. 2007. Living in prognosis: Toward an elegiac politics. *Representations*. 98(1):77-92.

Jain, S.L. 2013. *Malignant*. Berkeley, CA: University of California Press.

Ji, J., Liu, Y., Tong, X.H., Luo, L., Ma, J. & Chen, Z. 2013. The optimum number of oocytes in IVF treatment: An analysis of 2455 cycles in China. *Human Reproduction*. 28(10):2728-2734.

Jones, C. 2005. Looking like a family: Negotiating bio-genetic continuity in British lesbian families1 using licensed donor insemination. *Sexualities*. 8(2):221-237.

Jones, J., Horne, G. & Fitzgerald, C. 2012. Who needs ICSI? A nationwide UK survey on ICSI use. *Human Fertility*. 15(3):144-149.

Jordaan, D.W. 2016. Cross-jurisdiction egg donation: A South African perspective. *Medicine and Law*. 35(4):625-632.

Kahn, S.M. 2000. *Reproducing Jews: A Cultural Account of Assisted Conception in Israel*. Durham, NC: Duke University Press.

Kato, M. & Sleeboom-Faulkner, M. 2011. Meanings of the embryo in Japan: Narratives of IVF experience and embryo ownership. *Sociology of Health & Illness*. 33(3):434-447.

Kaufman, C.E. 2000. Reproductive control in apartheid South Africa. *Population Studies*. 54(1):105-114.

Kaufman, S.R. 2005. *And a Time to Die: How American Hospitals Shape the End of Life*. New York: Scribner.

Klausen, S. 2004. Women's resistance to eugenic birth control in Johannesburg, 1930-1939. *South African Historical Journal*. 50(1):152-169.

Klausen, S. 2010. "Reclaiming the white daughter's purity:" Afrikaner Nationalism, racialized sexuality, and the 1975 Abortion and Sterilization Act in apartheid South Africa. *Journal of Women's History*. 22(3):39-63.

Kleinman, A. 1992. Local worlds of suffering: an interpersonal focus for ethnographies of illness experience. *Qualitative Health Research*. 2: 127-134.

Kleinschmidt, I., Rees, H., Delany, S., Smith, D., Dinat, N., Nkala, B. & McIntyre, J.A. 2007. Injectable progestin contraceptive use and risk of HIV infection in a South African family planning cohort. *Contraception*. 75(6):461-467.

Klotz, M. 2014. *(K)information: Gamete Donation and Kinship Knowledge in Germany and Britain*. Frankfurt, Germany: Campus Verlag.

Kotze, D.J., Hansen, P., Keskintepe, L., Snowden, E., Sher, G. & Kruger, T. 2010. Embryo selection criteria based on morphology VERSUS the expression of a biochemical marker (sHLA-G) and a graduated embryo score: Prediction of pregnancy outcome. *Journal of Assisted Reproduction and Genetics*. 27(6):309-316.

Krause, E.L. & De Zordo, S. 2012. Introduction. Ethnography and biopolitics: Tracing "rationalities" of reproduction across the north-south divide. *Anthropology & Medicine*. 19(2):137-151.

Kroløkke, C. 2012. From India with love: Troublesome citizens of fertility travel. *Cultural Politics, an International Journal*. 8(2):307-325.

Kroløkke, C. 2014. West is best: Affective assemblages and Spanish oocytes. *European Journal of Women's Studies*. 21(1):57-71.

Kruger, T.F., Cronjé H.S., Stander, F.S., Menkveld, R. & Conradie, E. 1985. The effect of surgical glove powder on cleavage of two-cell mouse embryos in an in vitro fertilization programme. *South African Medical Journal*. 67(7):241-242.

Kruger, T.F., Van der Merwe, J.P., Stander, F.S.H., Menkveld, R., Van den Heever, A.D., Kopper, K., Odendaal, H.J., Van Zyl, J.A. & Villiers, J.N. 1986. Results of the in vitro fertilization programme at Tygerberg Hospital, phases II and III. *South African Medical Journal*. 69(5):297-300.

Kuczynski, W., Dhont, M., Grygoruk, C., Pietrewicz, P., Redzko, S. & Szamatowicz, M. 2002. Rescue ICSI of unfertilized oocytes after IVF. *Human Reproduction*. 17(9):2432-2427.

Landecker, H. 2005. Living differently in time: Plasticity, temporality and cellular biotechnologies. In *Technologized Images, Technologized Bodies*. J. Edwards, P. Harvey, and P. Wade, Eds. 211-236.

Larsen, U. 2000., Primary and secondary infertility in sub-Saharan Africa. *International Journal of Epidemiology*. 29:285-291.

Latour, B. 1999. *Pandora's Hope: Essays on the Reality of Science Studies*. Cambridge: Harvard University Press.

Latour, B., & Woolgar, S. 1979. *Laboratory Life: The Social Construction of Scientific Facts*. London: Sage.

Law, J. 2009. Actor network theory and material semiotics. In B. Turner, Ed. *The New Blackwell Companion to Social Theory*. Chichester, UK: Blackwell Publishing. 141-158.

Lazarus, N. 2004. The South African Ideology: The Myth of Exceptionalism, the Idea of Renaissance. *The South Atlantic Quarterly*. 103(3):607–628.

Leibbrandt, M., Finn, A. & Woolard, I. 2012. Describing and decomposing post-apartheid income inequality in South Africa. *Development Southern Africa*, 29(1):19-34.

Leridon, H. 1992. Sterility and subfecundity: From silence to impatience? *Population an English Selection*, 4:35-54.

Levin, D. 1979a. State moves to set up human sperm bank for childless couples. *Sunday Times* (Cape Town, SA). 16 December:2.

Levin, D. 1979b. The backroom baby-makers. *Sunday Times* (Cape Town, SA). 9 December:3.

Levine, N.E. 2008. Alternative kinship, marriage, and reproduction. *Annual Review of Anthropology*. 37(1):375-389.

Lindheim, S.R., Frumovitz, M. & Sauer, M.V. 1998. Recruitment and screening policies and procedures used to establish a paid donor oocyte registry. *Human Reproduction*. 13(7):2020-2024.

Lloyd, S. & Müller, R. 2018. Situating the biosocial: Empirical engagements with environmental epigenetics from the lab to the clinic. *BioSocieties*. 13(4):675-680.

Lock, M. 2012. From genetics to postgenomics and the discovery of the new social body. In *Medical anthropology at the intersections*. M. C. Inhorn and E. A. Wentzell, Eds. Durham: Duke University Press. 129–162.

Lock, M. 2015. Comprehending the body in the era of the epigenome. *Current Anthropology*. 56(2):151–177.

Lock, M. & Nguyen, V.K. 2010. Kinship, infertility, and assisted reproduction. In *An Anthropology of Biomedicine*. M. Lock and V.-K. Nguyen, Eds. West Sussex, UK: Wiley. 254-280.

Lock, M. & Nguyen, V.K. 2018. *An Anthropology of Biomedicine*. West Sussex, UK: Wiley.

London, L. 1999. The “dop” system, alcohol abuse and social control amongst farm workers in South Africa: a public health challenge. *Social Science & Medicine*. 48:1407–1414.

Lowe, B., Osborn, J.C., Fothergill, D.J., Lieberman, B.A. 1988. Factors associated with accidental fractures of the zona pellucida and multipronuclear human oocytes following in-vitro fertilization. *Human Reproduction*. 3(7):901–904.

Lupton, M.L. 1985. The status of children born by artificial insemination in South African law. *The Journal of South African Law*. 277-295.

Lundberg, F.E. et al., 2019. Assisted reproductive technology and risk of ovarian cancer and borderline tumors in parous women: a population-based cohort study. *European Journal of Epidemiology*. 34(11):1093–1101.

Marcus, G.E. 1995. Ethnography in/of the world system: The emergence of multi-sited ethnography. *Annual Review of Anthropology*. 24:95-117.

McClintock, A. 1995. *Imperial Leather: Race, Gender, and Sexuality in the Colonial Contest*. New York: Routledge.

M'Charek, A. 2010. Fragile differences, relational effects: Stories about the materiality of race and sex. *European Journal of Women's Studies*. 17(4):307-322.

M'Charek, A. 2013. Beyond fact or fiction: On the materiality of race in practice. *Cultural Anthropology*. 28(3):420-442.

Macleod, C. 2001. Teenage motherhood and the regulation of mothering in the scientific literature: The South African example. *Feminism & Psychology*. 11(4):493-510.

Malkki, L. 2015. *The Need to Help*. Durham, NC: Duke University Press.

Mamo, L. 2005. Biomedicalizing kinship: Sperm banks and the creation of affinity-ties. *Science as Culture*. 14(3):237-264.

Maree, A. 1979. Court asks if AID baby is illegitimate. *The Citizen*. April 5:2.

Marin, D., Scott, R.T., Jr. & Treff, N.R. 2017. Preimplantation embryonic mosaicism. *Current Opinion in Obstetrics and Gynecology*. 29(3):168-174.

Marre, D., Román, B.S. & Guerra, D. 2018. On reproductive work in Spain: Transnational adoption, egg donation, surrogacy. *Medical Anthropology*. 37(2):158-173.

Marshak, N. 2015. "She's just like my mother:" Measuring motherhood in the context of the HIV epidemic in South Africa. *Anthropology Southern Africa*. 34(3-4):122-128.

Martin, E. 1987. *The Woman in the Body: A Cultural Analysis of Reproduction*. Boston: Beacon Press.

Mascarenhas, M.N., Flaxman, S.R., Boerma, T., Vanderpoel, S. & Stevens, G.A. 2012. National, regional, and global trends in infertility prevalence since 1990: A systematic analysis of 277 health surveys. *PLoS Medicine*. 9(12):e1001356-12.

Masters, N.C. 1953. Artificial insemination. *The South African Law Journal*. 70(4): 375-380.

Mayosi, B.M. & Benatar, S.R. 2014. Health and health care in South Africa — 20 years after Mandela. *The New England Journal of Medicine*. 371(14):1344-1353.

Mazzaschi, A. 2011. Surgeon and safari: Producing valuable bodies in Johannesburg. *Signs Journal of Women in Culture and Society*. 36(2):303-312.

Mbembe, A., 2003. Necropolitics. *Public Culture*, 15(1), pp.11–40.

Mbembe, A. & Nuttall, S. 2004. Writing the world from an African metropolis. *Public Culture*. 16(3):347-372.

McDougall, K.L. 2013. *The Threat of History: Post-Apartheid Genea-logic and Apartheid-Generation Afrikaner Life Chronicles*. University of Chicago.

McDougall, K.L. 2014. Just living: Genealogic, honesty and the politics of apartheid time. *Anthropology Southern Africa.* 37(1-2):19-29.

Melo-Martín, I.D. 2014. The ethics of anonymous gamete donation: Is there a right to know one's genetic origins? *Hastings Center Report.* 44(2):28-35.

Meloni, M. 2015. Heredity 2.0: The epigenetics effect. *New Genetics and Society.* 0(0):1-8.

Mentor, S. 1998. Witches, Nurses, Midwives, and Cyborgs. In R. Davis-Floyd & J. Dumit, Eds. *Cyborg Babies: IVF, ART, and Complex Agency in the World of Technobirth.* New York: Routledge. 67–89.

Merck foundation brings together 15 African first ladies to break the stigma of infertility. 2019. *CNBC Africa.* April 17. Available https://www.cnbcafrica.com/apo/2019/04/17/merck-foundation-brings-together-15-african-first-ladies-to-break-the-stigma-of-infertility/

Mikkelsen, H.H. 2017. Never too late for pleasure: Aging, neoliberalism, and the politics of potentiality in Denmark. *American Ethnologist.* 44(4):646-656.

Mkhwanazi, N. 2014a. Twenty years of democracy and the politics of reproduction in South Africa. *African Identities.* 12(3-4):326-341.

Mkhwanazi, N. 2014b. "An African way of doing things:" Reproducing gender and generation. *Anthropology Southern Africa.* 37(1-2):107-118.

Mladovsky, P. & Sorenson, C. 2009. Public Financing of IVF: A Review of Policy Rationales. *Health Care Analysis.* 18(2):113–128.

Modell, J. 1989. Last Chance Babies: Interpretations of Parenthood in an In Vitro Fertilization Program. *Medical Anthropology Quarterly* 3(2):124–138.

Mohr, S. 2014. Beyond motivation: On what it means to be a sperm donor in Denmark. *Anthropology & Medicine.* 21(2):162-173.

Mohr, S. 2016. Containing sperm — managing legitimacy: Lust, disgust, and hybridity at Danish sperm banks. *Journal of Contemporary Ethnography.* 45(3):319-342.

Mol, A. 2003. *The Body Multiple*, Durham, NC: Duke University Press.

Mol, A. 2008. *The Logic of Care.* London: Routledge.

Moll, T. 2018. Blue binders of white donors: sorting race out in South African IVF. *Somatosphere.* 7 February. Available http://somatosphere.net/2018/blue-binders.html/

Moll, T. 2019. Making a match: Curating race in South African gamete donation. *Medical Anthropology.* 38(7): 588-602.

Mooney, G.H. & McIntyre, D.E. 2008. South Africa: A 21st century apartheid in health and health care? *The Medical Journal of Australia.* 189(11):637-640.

Moreira, T. 2006. Heterogeneity and Coordination of Blood Pressure in Neurosurgery. *Social Studies of Science*. 36(1):69–97.

Moreira, T. & Palladino, P. 2005. Between truth and hope: On Parkinson's disease, neurotransplantation and the production of the "self." *History of the Human Sciences*. 18(3):55-82.

Morgan, L.M. 2009. *Icons of Life*. Berkeley, CA: University of California Press.

Morrison, C.S., Skoler-Karpoff, S., Kwok, C., Chen, P.L., Van de Wijgert, J., Gehret-Plagianos, M., Patel, S., Ahmed, K., Ramjee, G., Friedland, B. & Lahteenmaki, P. 2012. Hormonal contraception and the risk of HIV acquisition among women in South Africa. *AIDS*. 26(4):497-504.

Mosaka, Azania. 2018. When Babies Don't Come documentary feature breaks the silence on infertility in black communities [podcast]. The Best of Azania Mosaka show. Johannesburg: Prime Media Broadcasting. Available http://www.702.co.za/podcasts/128/the-best-of-azania-mosaka-show/116037/when-babies-dont-come-documentary-feature-breaks-the-silence-on-infertility-in-black-communities

Moultrie, T.A. 2001. *Apartheid's Children: Social Institutions and Birth Intervals during the South African Fertility Decline, 1960-1998*. PhD Thesis. London School of Hygiene & Tropical Medicine.

Müller-Rockstroh, B., 2012. Appropriate and Appropriated Technology: Lessons Learned from Ultrasound in Tanzania. *Medical Anthropology*. 31(3):196–212.

Nachtigall, R.D. 2006. International disparities in access to infertility services. *Fertility and Sterility*, 85(4):871–875.

Nahman, M. 2006. Materializing Israeliness: Difference and mixture in transnational ova donation. *Science as Culture*. 15(3):199–213.

Nahman, M. 2011. Reverse traffic: intersecting inequalities in human egg donation. *Reproductive BioMedicine Online*, 23(5):626–633.

Nahman M. 2013. *Extractions: An Ethnography of Reproductive Tourism*. Basingstoke, UK: Palgrave MacMillan

Nahman, M. 2016. Reproductive tourism: Through the anthropological "reproscope." *Annual Review of Anthropology*. 45(1):417-432.

Nahman, M. 2018. Migrant extractability: Centring the voices of egg providers in cross-border reproduction. *Reproductive BioMedicine and Society Online*. 7:82–90.

Naidu, S., Bhana, M. & Moodley, N. 2014. Low cost infertility and assisted reproductive technology treatment. *Obstetrics Gynaecology Forum*. 24:17-20.

Namberger, V. 2016. The South African economy of egg donation: Looking at the bioeconomic side of normalization. In *Assisted Reproduction Across Borders: Feminist Perspectives on Normalizations, Disruptions and Transmissions*. M. Lie and N. Lykke, Eds. New York: Routledge. 72-83.

National Council of Provinces [NCOP]. 2005a. *Workshop on the Children's Bill: Surrogate Motherhood.* Available http://pmg-assets.s3-website-eu-west-1.amazonaws.com/docs/2005/050830vanzyl.htm

National Council of Provinces [NCOP]. 2005b. *Controversial Issues in the Children's Bill.* August 29. Available https://pmg.org.za/committee-meeting/5468/

National Health Act, No. 61 of 2003. Regulation. 2014. *Government Gazette.* 38000. 19 September. Government notice no. R719. Pretoria: Government Printer.

National Health Act, No. 61 of 2003. Regulation. 2012. *Government Gazette.* 35099. 1 March. Government notice no. R181. Pretoria: Government Printer.

National Health Service. 2018. *IVF Availability.* Available https://www.nhs.uk/conditions/ivf/availability

Nattrass, N. & Seekings, J. 2001. "Two Nations?" Race and Economic. *Daedalus.* 130(1):45–70.

Nel-Themaat, L. & Nagy, Z.P. 2011. A review of the promises and pitfalls of oocyte and embryo metabolomics. *YPLAC.* 32(Supplement 3):S257-S263.

Neocosmos, M. 2008. The Politics of Fear and the Fear of Politics: Reflections on Xenophobic Violence in South Africa. *Journal of Asian and African Studies.* 43(6):586–594.

Nichols, C.E. 2019. Geographic contingency, affective facts, and the politics of global nutrition policy. *Geoforum*:1-0.

Niehaus, I. 2013. Anthropology and whites in South Africa: Response to an unreasonable critique. *Africa Spectrum.* 48(1):117-127.

Nuttall, S. 2004. Girl Bodies. *Social Text.* 22(1):17-33.

Nyamnjoh, F. 2012. Blinded by sight: Divining the future of anthropology in Africa. *Africa Spectrum.* 47(2-3):63-92.

Nyamnjoh, F. 2013. From quibbles to substance: A response to responses. *African Spectrum.* 48(2):127-139.

Offersen, S.M.H., Risør, M.B., Vedsted, P., & Andersen, R.S. 2016. Am I fine? Exploring everyday life ambiguities and potentialities of embodied sensations in a Danish middle-class community. *Medicine Anthropology Theory.* 3(3):23–23.

O'Hara, G. 1980. Sperm banks — as a last resort say women. *Rand Daily Mail* (Johannesburg, SA). 16 April:10.

Ombelet, W. 2012. Global access to infertility care in developing countries: a case of human rights, equity and social justice. *Facts, views vision in ObGyn*, Monograph:7-16.

Ombelet, W. 2013. The Walking Egg Project: Universal access to infertility care — from dream to reality. *Facts, views vision in ObGyn*, 5(2):161-175.

Ombelet, W. 2014. Is global access to infertility care realistic? The Walking Egg Project. *Reproductive BioMedicine Online*. 28(3):267-272.

Ombelet, W. 2015. Global access to reproductive technologies and infertility care in developing countries. In *Assisted Reproduction in the Third Phase: Global Encounters and Emerging Moral Worlds*. K. Hampshire & B. Simpson, Eds. New York: Berghahn. 105-118.

Ombelet, W., Cooke, I., Dyer, S., Serour. G. & Devroey, P. 2008. Infertility and the provision of infertility medical services in developing countries. *Human Reproduction Update*. 14(6):605-621.

Ong, A. 2003. *Buddha is Hiding: Refugees, Citizenship, the New America.* Berkeley, CA: University of California Press.

Ormond, M. 2018. Adoption, genealogical bewilderment and biological heritage bricolage. In H. Muzaini & C. Minca, Eds. After Heritage: Critical Perspectives on Heritage from Below. Cheltenham, UK: Edward Elgar Publishing. 148-168.

Orthofer, A. 2016. Wealth Inequality in South Africa: Insights from Survey and Tax Data. REDI3x3 Working Paper 15, University of Cape Town. Available at http://www.redi3x3.org/sites/default/files/Orthofer%202016%20REDI3x3%20Working%20Paper%2015%20-%20Wealth%20inequality.pdf

Oudendijk, J.F., Yarde, F., Eijkemans, M.J.C., Broekmans, F.J.M., & Broer, S.L. 2012. The poor responder in IVF: is the prognosis always poor? A systematic review. *Human Reproduction Update*, 18(1):1–11.

Pande, A. 2014. *Wombs in Labor: Transnational Commercial Surrogacy in India.* New York: Colombia University Press.

Pande, A. 2015. Global reproductive inequalities, neo-eugenics and commercial surrogacy in India. *Current Sociology*. 64(2):1-15.

Pande, A. and Moll, T. 2018. Gendered bio-responsibilities and travelling egg providers from South Africa. *Reproductive BioMedicine & Society Online*. 6:23-33.

Parliament. National Assembly. 1983. *Debates of the National Assembly (Hansard), third session, seventh Parliament.* 106(4 May -6 May). Cape Town: Parliament.

Parrott, F.R. 2014. "At the hospital I learnt the truth:" Diagnosing male infertility in rural Malawi. *Anthropology & Medicine*. 21(2):174-188.

Pashigian, M.J. 2012. Counting one's way onto the global stage: Enumeration, accountability, and reproductive success in Vietnam. *Positions*. 20(2):529-558.

Pashigian, M.J. 2009. The womb, infertility, and the vicissitudes of kin-relatedness in Vietnam. *Journal of Vietnamese Studies*. 4(2):34-68.

Patrizio, P. 1995. Intracytoplasmic sperm injection (ICSI): potential genetic concerns. *Human Reproduction*, 10(10):2520–2523.

Patrizio, P. & Inhorn, M.C. 2009. Rethinking reproductive "tourism" as reproductive "exile." *Fertility and Sterility*. 92(3):904-906.

Patrizio, P., Mastroianni, A.C. & Mastroianni, L. 2001. Disclosure to children conceived with donor gametes should be optional. *Human Reproduction*. 16(10):2036-2038.

Paxson, H. 2006. Reproduction as spiritual kin work: Orthodoxy, IVF, and the moral economy of motherhood in Greece. *Culture, Medicine and Psychiatry*. 30(4):481-505.

Payne, J.G. 2014. Reproduction in transition: Cross-border egg donation, bio desirability and new reproductive subjectivities on the European fertility market. *Gender, Place and Culture*. 22(1):107-122.

Payne, J.G., 2016. Grammars of Kinship: Biological Motherhood and Assisted Reproduction in the Age of Epigenetics. *Signs Journal of Women in Culture and Society*, 41(3), pp.483–506.

Pennings, G. 2001. The reduction of sperm donor candidates due to the abolition of the anonymity rule: Analysis of an argument. *Journal of Assisted Reproduction and Genetics*. 18(11):617-622.

Pentecost, M. 2018. The First Thousand Days: Epigenetics in the age of global health. In .M Meloni, J. Cromby, D. Fitzgerald, S. Lloyd, Eds. *The Handbook of Biology and Society*. London: Palgrave Macmillan. 269–294.

Pentecost, M. & Ross, F. 2019. The First Thousand Days: Motherhood, scientific knowledge, and local histories. *Medical Anthropology*. 0(00):1-15.

Pepper, M.S. 2012. Enactment of Chapter 8 of the National Health Act and regulations thereto. *South African Journal of Bioethics & Law*. 5(1):1-2.

Pepper, M.S. & Slabbert, M.N. 2015. Human tissue legislation in South Africa: Focus on stem cell research and therapy. *South African Journal of Bioethics and Law*, 8(2):4–8.

Petryna, A. 2002. Life exposed. Princeton: Princeton University Press.

Pfeffer, N. 2011. Eggs-ploiting women: A critical feminist analysis of the different principles in transplant and fertility tourism. *Reproductive BioMedicine Online*. 23(5):634-641.

Pleming, S. 1987. Gran pregnant with daughter's triplets. *The Star* (Johannesburg, SA). 6 April:1.

Polis, C.B. & Curtis, K.M. 2013. Use of hormonal contraceptives and HIV acquisition in women: A systematic review of the epidemiological evidence. *The Lancet Infectious Diseases*. 13(9):797-808.

Pollock, A. & Subramaniam, B. 2016. Resisting power, retooling justice: Promises of feminist postcolonial technosciences. *Science, Technology & Human Values*. 41(6):951-966.

Porter, T. 1995. *Trust in Numbers*. Princeton, NJ: Princeton University Press.

Posel, D. 2001. What's in a name? Racial categorizations under apartheid and their afterlife. *TRANSFORMATION-DURBAN-*:59-82.

Potts, D. & Marks, S. 2001. Fertility in Southern Africa: The quiet revolution. *Journal of Southern African Studies*. 27(2):189-205.

Proefbuisbabas se regte belig. 1984. *Die Vaderland* (South Africa). 4 May:7.

Quinn, N. & Mageo, J.M. 2013. Attachment and culture: An introduction. In *Attachment Reconsidered: Cultural Perspectives on a Western Theory*. N. Quinn and J.M. Mageo, Eds. New York: Palgrave-MacMillan. 3-32.

Rabinow, P. 1996. Artificiality and Enlightenment: From Sociobiology to Biosociality. In S. Ortner, N. Dirks, & G. Eley, Eds. *Essays on the Anthropology of Reason.* New York: Zone Books: 91–111

Racowsky, C., Vernon, M., Mayer, J., Ball, G.D., Behr, B., Pomeroy, K.O., Wininger, D., Gibbons, W., Conaghan, J. & Stern, J.E. 2010. Standardization of grading embryo morphology. *Journal of Assisted Reproduction and Genetics*. 27(8):437-439.

Rajeswar, J. 2000. Population perspectives and sustainable development. *Sustainable Development.* 8:135-141.

Ramey, J. 2015. Neoliberalism as a political theology of chance: the politics of divination.*Palgrave Communication*. 15039: 1-9.

Rapp, R. & Ginsberg, F.D. 1995. Introduction: Conceiving the New World Order. In *Conceiving the New World Order*. R. Rapp and F.D. Ginsberg, Eds. Berkeley, CA: University of California Press. 1-15.

Rapp, R. 1999. *Testing Women, Testing the Fetus: The Social Impact of Amniocentesis in America.* New York: Routledge.

Reh, A., Amarosa, A., Licciardi, F., Krey, L., Berkeley, A.S. & Kump, L. 2010. Evaluating the necessity for universal screening of prospective oocyte donors using enhanced genetic and psychological testing. *Human Reproduction*. 25(9):2298-2304.

Rehman, K.S., Bukulmez, O., Langley, M., Carr, B., Nackley, A., Doody, K., Doody, K. 2007. Late stages of embryo progression are a much better predictor of clinical pregnancy than early cleavage in intracytoplasmic sperm injection and in vitro fertilization cycles with blastocyst-stage transfer. *Fertility and Sterility*. 87(5):1041–1052.

Richardson, S.S. 2015. Maternal bodies in the postgenomic order: Gender and the explanatory landscape of epigenetics. In *Postgenomics: Perspectives on Biology after the Genome*. S.S. Richardson and H. Stevens, Eds. 210-231.

Richardson, S.S., 2017. Plasticity and Programming: Feminism and the Epigenetic Imaginary. *Signs Journal of Women in Culture and Society*, pp.29–51.

Rienzi, L.F. & Ubaldi, F.M. 2018. Oocyte retrieval and selection. In D.K. Gardner, A. Weissman, C.M. Howles, & Z. Shoman. Eds. *Textbook of Assisted Reproductive Techniques, Fifth Edition. Volume 1: Laboratory Perspectives.* Boca Raton, FL: CRC Press. 88-107.

Roberts, D.E. 2009. Race, gender, and genetic technologies: A new reproductive dystopia? *Signs Journal of Women in Culture and Society.* 34(4):783-804.

Roberts, E. 2011. Abandonment and accumulation: Embryonic futures in the United States and Ecuador. *Medical Anthropology Quarterly.* 25(2):232-253.

Roberts, E. 2008. Extra embryos: The ethics of cryopreservation in Ecuador and elsewhere. *American Ethnologist.* 34(1):181-199.

Roberts, E. 2012. *God's Laboratory: Assisted Reproduction in the Andes.* Berkeley, CA: University of California Press.

Roberts, E. & Scheper-Hughes, N. 2011. Introduction: Medical migrations. *Body & Society.* 17(2-3):1-30.

Robins, S. 2006. From "Rights" to "Ritual:" AIDS activism in South Africa. *American Anthropologist.* 108(2):312-323.

Roos, N. 2015. Race suicide and Christian national femininity: Motherhood, childhood and *moederkunde* in the 1950s. Paper presented at the panel "M(Other)ness: Rethinking the worlds of nurture, potentiality and risk." *Anthropology Southern Africa* Annual Conference, Potchefstroom, September 1–3.

Rose, N. 2007. *Politics of Life Itself*, Princeton, NJ: Princeton University Press.

Rose, N., and C. Novas. 2005. Biological citizenship. In A. Ong and S. Collier, Eds. *Global Assemblages.* Malden, MA: Blackwell. 439–463

Ross, F. 2010. *Raw Life, New Hope*, Cape Town: UCT Press.

Rubio, I., Galán, A., Larreategui, Z., Ayerdi, F., Bellver, J., Herrero, J. & Meseguer, M. 2014. Clinical validation of embryo culture and selection by morphokinetic analysis: A randomized, controlled trial of the EmbryoScope. *Fertility and Sterility.* 102(5):1287-1294.e5.

Rutstein, S.O. & Shah, I.H. 2004. *Infecundity, Infertility, and Childlessness in Developing Countries.* Measure DHS.

Safari, S., Razi, M.H., Safari, S., & Razi, Y. 2015. Routine use of EmbryoGlue® as embryo transfer medium does not improve the ART outcomes. *Archives of Gynecology and Obstetrics*, 291(2):433–437.

Sahlins, M. 1999. What is anthropological enlightenment? Some lessons of the Twentieth Century. *Annual Review of Anthropology* 28:i–xxiii.

Sahlins, M. 2013. *What kinship is — and is not.* Chicago: University of Chicago Press.

Saldeen, P. & Sundström, P. 2005. Would legislation imposing single embryo transfer be a feasible way to reduce the rate of multiple pregnancies after IVF treatment? *Human Reproduction*. 20(1):4-8.

Salusbury, T. & Foster, D. 2004. Rewriting WESSA identity. In *Under Construction*. N. Distiller and M. Steyn, Eds. Sandton, SA: Heinemann. 93-109.

Sandelowski, M. 1991. Compelled to try: The never-enough quality of conceptive technology. *Medical Anthropology Quarterly*. 5(1):29-47.

Sants, H.J. 1964. Genealogical bewilderment in children with substitute parents. *British Journal of Medical Psychology*. 37:133-140.

Seekings, J. 2007. "Not a single white person should be allowed to go under:" Swartgevaar and the origins of South Africa's welfare state, 1924–1929. *The Journal of African History*. 48(03):375–394.

South African Law Reform Commission [SALRC]. 2017. *Issue Paper 32: The Right to Know One's Own Biological Origins*. 20 May. Available http://pmg-assets.s3-website-eu-west-1.amazonaws.com/170720righttoknowonesownbiologicalorigns.pdf

South Africa. Social Services Select Committee. 2015. *Children's Bill Hearings*. 10 October. Available https://pmg.org.za/committee-meeting/10319/

South African Society for Reproductive Medicine and Gynecological Endoscopy [SASREG]. 2015. SASREG Guidelines for Egg Donation Agencies. 26 June. Available https://sasreg.co.za/downloads/Guidelines-for-Egg-Donation-Agencies.pdf

South African Society for Reproductive Medicine and Gynecological Endoscopy [SASREG]. 2017. *South African Registry for Assisted Reproductive Techniques 2014*.

South African Society of Reproductive Science and Surgery [SASRSS]. 2008. Guidelines for gamete donation.

Sawyer, N. & McDonald, J. 2008. A review of mathematical models used to determine sperm donor limits for infertility treatment. *Fertility and Sterility*. 90(2):265-271.

Scheib, J.E. & Ruby, A. 2009. Beyond consanguinity risk: Developing donor birth limits that consider psychosocial risk factors. *Fertility and Sterility*. 91(5):p.e12.

Scheper-Hughes, N. 2007. Violence and the politics of remorse: Lessons from South Africa. In *Subjectivity: Ethnographic Investigations*. J. Biehl, B. Good, and A. Kleinman, Eds. Berkeley, CA: University of California Press. 179-233

Scheper-Hughes, N. 2001. Bodies for sale: Whole or in parts. *Body & Society*. 7(2-3): 1-8.

Scott, R. et al. 2008. Noninvasive metabolomic profiling of human embryo culture media using Raman spectroscopy predicts embryonic reproductive potential: a prospective blinded pilot study. *Fertility and Sterility*. 90(1):77–83.

Segar, S. 1998. Laws to formulize centuries-old mothering practice. *Natal Witness* (Pietermaritzburg, SA). 27 June:7.

Shange, N. 2018. "Please make fertility treatment affordable in Africa." *TimesLive* (South Africa). 12 July. Available https://www.timeslive.co.za/news/africa/2018-07-12-please-make-fertility-treatment-affordable-in-africa/

Shaw, M.K. 2018. The familial and the familiar: Locating relatedness in Colombian donor conception. *Medical Anthropology*. 37(4):280-293.

Shaw, R. 2007. The gift-exchange and reciprocity of women in donor-assisted conception. *The Sociological Review*. 55(2):293-310.

Shepherd, N. & Robins, S. 2008. Introduction: New South African Keywords. In N. Shepherd & S. Robins, Eds. *New South African Keywords*. Auckland Park, SA: Jacana Media. 1-12.

Sherman, R. & Steyn, M. 2009. 4. E-race-ing the line: South African interracial relationships yesterday and today. In *The Prize and the Price: Shaping Sexualities in South Africa*. M. Steyn and M. van Zyl, Eds. 55-81.

Silva, S. & Machado, H. 2010. Uncertainty, risks and ethics in unsuccessful in vitro fertilization treatment cycles. *Health, Risk & Society*. 12(6):531-545.

Simpson, B. 2013. Managing potential in assisted reproductive technologies. *Current Anthropology*. 54(S7):S87-S96.

Simpson, B. 2009. We have always been modern: Buddhism, science and the new genetic and reproductive technologies in Sri Lanka. *Culture and Religion*. 10(2):137-157.

Smith, A., Tilling, K., Nelson, S.M., Lawlor, D.A. 2015. Live-Birth Rate Associated With Repeat In Vitro Fertilization Treatment Cycles. *Journal of the American Medical Association*. 314(24):2654–2662.

N' Socioloog besin. 1982. *Die Transvaler* (South Africa). 18 June: 11.

Speier, A. 2016. *Fertility Holidays: IVF Tourism and the Reproduction of Whiteness*. New York: New York University Press.

Spencer, E.A., Mahtani, K.R., Goldacre, B. & Heneghan, C. 2016. Claims for fertility interventions: A systematic assessment of statements on UK fertility centre websites. *BMJ Open*. 6(11):e013940-7.

Spinella, F., Fiorentino, F., Biricik, A., Bono, S., Ruberti, A., Cotroneo, E., Baldi, M., Cursio, E., Minasi, M.G. & Greco, E. 2018. Extent of chromosomal mosaicism influences the clinical outcome of in vitro fertilization treatments. *Fertility and Sterility*. 109(1):77-83.

Stassen, W. 2015. Cutting the cost of conceiving. *Cape Argus* (Cape Town, SA). 16 January:18.

Statistics South Africa. 2000. *South African Statistics 2000*. Pretoria, SA: Statistics South Africa. Available http://www.statssa.gov.za/publications/SAStatistics/SAStatistics2000.pdf

Statistics South Africa. 2018. Mid-year Population Estimates. Pretoria: Statistics South Africa. Available https://www.statssa.gov.za/publications/P0302/P03022018.pdf

Staufenberg, J. 2015. Mum's picture of IVF baby surrounded by syringes goes viral. *The Independent* (UK). 9 October. Available https://www.independent.co.uk/life-style/love-sex/new-mums-picture-of-ivf-baby-surrounded-by-fertility-syringes-goes-viral-a6687236.html

Steward, R.G., Lan, L., Shah, A.A., Yeh, J.S., Price, T.M., Goldfarb, J.M. & Muasher, S.J. 2014. Oocyte number as a predictor for ovarian hyperstimulation syndrome and live birth: An analysis of 256,381 in vitro fertilization cycles. *Fertility and Sterility*. 101(4):967-973.

Steyn, M. 2001. *Whiteness just isn't what it used to be: White identity in a changing South Africa*. Albany, NY: SUNY Press.

Steyn, M. 2004. Rehabilitating a whiteness disgraced: Afrikaner white talk in post-apartheid South Africa. *Communication Quarterly*. 52(2):143–169.

Steyn, M. & Foster, D. 2008. Repertoires for talking white: Resistant whiteness in post-apartheid South Africa. *Ethnic and Racial Studies*. 31(1):25-51.

Strauss, P.J. 2018. Johan Heyns and critique in the Dutch Reformed Church against apartheid: The moderator a prophet? *HTS Teologiese Studies/Theological Studies*. 74(3):1-8.

Strathern, M. 1992a. *After Nature: English Kinship in the Late Twentieth Century*. Cambridge, UK: Cambridge University Press.

Strathern, M. 1992b. *Reproducing the Future: Anthropology, Kinship and the New Reproductive Technologies*. Manchester, UK: Manchester University Press.

Strathern, M. 1996. Potential property. Intellectual rights and property in persons. *Social Anthropology*. 4(1):17-32.

Strathern, M. 2005. *Kinship, Law, and the Unexpected: Relatives are Always a Surprise*. Cambridge, UK: Cambridge University Press.

Sunder Rajan, K. 2007. *Biocapital: The Constitution of Postgenomic Life*. Durham, NC: Duke University Press.

Sunkara, S.K., Rittenberg, V., Raine-Fenning, N., Bhattacharya, S., Zamora, J. & Coomarasamy, A. 2011. Association between the number of eggs and live birth in IVF treatment: An analysis of 400 135 treatment cycles. *Human Reproduction*. 26(7):1768-1774.

Svendsen, M.N. 2011. Articulating potentiality: Notes on the delineation of the blank figure in human embryonic stem cell research. *Cultural Anthropology*. 26(3):414-437.

Svendsen, M.N. & Koch, L. 2008. Unpacking the "Spare Embryo:" Facilitating stem cell research in a moral landscape. *Social Studies of Science*. 38(1):93-110.

Swain, J.E. 2013. Could time-lapse embryo imaging reduce the need for biopsy and PGS?. *Journal of assisted reproduction and genetics*. 30(8):1081-1090.

Synod rules on test tube babies. 1986. *The Star* (Johannesburg, SA). 17 October:18.

Taussig, K.-S., Hoeyer, K. & Helmreich, S. 2013. The anthropology of potentiality in biomedicine. *Current Anthropology*. 54(S7):S3-S14.

Taylor, J. 2009. *The Transplant Men*. Auckland Park, South Africa: Jacana Media.

Thompson, C. 2013. *Good Science: The Ethical Choreography of Stem Cell Research*. Cambridge, MA: MIT Press.

Thompson, C. 2005. *Making Parents: The Ontological Choreography of Reproductive Technologies*. Cambridge, MA: MIT Press.

Thompson, C. 2001. Strategic naturalizing: Kinship in an infertility clinic. In *Relative Values: Reconfiguring Kinship Studies*. S. Franklin and S. McKinnon, Eds. Durham, NC: Duke University Press. 175-202.

Thorn, P. 2015. Family dynamics and counselling of donor children. *SASREG National Congress*. 31 October – 1 November. Johannesburg.

Throsby, K. 2004. *When IVF Fails: Feminism, Infertility and the Negotiation of Normality*. London: Palgrave MacMillan.

Throsby, K. 2002. "Vials, ampoules and a bucketful of syringes:" The experience of the self-administration of hormonal drugs in IVF. *Feminist Review*. 72:62-77.

Timmermans, S. & Stivers, T. 2018. Clinical forecasting: Towards a sociology of prognosis. *Social Science & Medicine*. 218:1-34.

Todes, A., Kok, P., Wentzel, M., van Zyl, J., & Cross, C. 2010. Contemporary South African Urbanization Dynamics. *Urban Forum* 21(3):331–348.

Tollefsbol, T. 2011. *Handbook of Epigenetics. The New Molecular and Medical Genetics*. London: Elsevier.

Traweek, S. 1993. An introduction to cultural and social studies of sciences and technologies. *Culture, Medicine and Psychiatry*. 17:3-25.

Tsing, A.L. 2013. Sorting out commodities: How capitalist value is made through gifts. *HAU: Journal of Ethnographic Theory*. 3(1):21-43.

Tsing, A.L. 2017. *The Mushroom at the end of the World*. Princeton, NJ: Princeton University Press.

Tuit, M. 1982. Salute to test tube father. *Rand Daily Mail* (Johannesburg, SA). 8 February: 1.

Urla, J. 1993. Cultural Politics in an Age of Statistics: Numbers, Nations, and the Making of Basque Identity. *American Ethnologist.* 20(4):818–843.

Van Balen, F. & Gerrits, T. 2001. Quality of infertility care in poor-resource areas and the introduction of new reproductive technologies. *Human Reproduction.* 16(2):215–219.

Van de Wiel, L. 2014. The time of the change: Menopause's medicalization and the gender politics of aging. *International Journal of Feminist Approaches to Bioethics.* 7(1):74-98.

Van der Berg, S. 2007. Apartheid's enduring legacy: Inequalities in education. *Journal of African Economies.* 16(5): 849-880.

Van der Gaast, M.H., Eijkemans, M.J., Van der Net, J.B., de Boer, E.J., Burger, C.W., Van Leeuwen, F.E., Fauser, B.C. & Macklon, N.S. 2006. Optimum number of oocytes for a successful first IVF treatment cycle. *Reproductive BioMedicine Online.* 13(4):476-480.

Van der Westhuizen, C. 2017. *Sitting Pretty: White Afrikaans Women in Postapartheid South Africa.* Durban, SA: University of KwaZulu-Natal Press.

Van Rosmalen, L., Van Izjendoorn, M.H. & Bakermans-Kranenburg, M. 2014. ABC+ D of attachment theory. In *Routledge Handbook of Attachment: Theory, London: Routledge.* P. Holmes and S. Farnfield, Eds. London: Routledge. 11-30.

Van Royen, E., Mangelschots, K., De Neubourg, D., Valkenburg, M., Van de Meerssche, M., Ryckaert, G., Eestermans, W., & Gerris, J. 1999. Characterization of a top quality embryo, a step towards single-embryo transfer. *Human Reproduction.* 14(9):2345–2349.

Van Niekerk, E.C., Siebert, I. & Kruger, T.F. 2013. An evidence-based approach to recurrent pregnancy loss. *South African Journal of Obstetrics and Gynaecology.* 19(3):61-65.

Van Wyk, I. 2012. "Tata ma chance:" On contingency and the lottery in post-apartheid South Africa. *Africa.* 82(01):41-68.

Vertommen, S. 2015. Assisted reproductive technologies at the frontier: Towards a decolonial approach. *Science as Culture.* 24(4):532-537.

Vigh, H. 2012. Vigilance: On conflict, social invisibility, and negative potentiality. *Social Analysis.* 55(3):1-23.

Vorster, R. 1988. Vroue stroom na SA vir bevrugtning. *Rapport* (Johannesburg, SA). 20 November:4.

Vrou word ma ná skenker-eierselle. 1987. *Die Burger* (Cape Town, SA). 15 July:1.

Waggoner, M.R. 2015. Cultivating the maternal future: Public health and the prepregnant self. *Signs Journal of Women in Culture and Society.* 40(4):939-962.

Waldby, C. 2002. Stem cells, tissue cultures and the production of biovalue. *Health.* 6(3):305–323.

Waldby, C. 2008. Oocyte markets: Women's reproductive work in embryonic stem cell research. *New Genetics and Society*. 27(1):19-31.

Waldby, C. 2015. The oocyte market and social egg freezing: From scarcity to singularity. *Journal of Cultural Economy*. 8(3):275-291.

Waldby, C. 2014. "Banking time:" Egg freezing and the negotiation of future fertility. *Culture, Health & Sexuality*. 17(4):470-482.

Waldby, C. & Carroll, K. 2011. Egg donation for stem cell research: Ideas of surplus and deficit in Australian IVF patients' and reproductive donors' accounts. *Sociology of Health & Illness*. 34(4):513-528.

Waltz, M. 2015. *Milk, Meaning and Morality: Tracing Donated Breast Milk from Donor to Baby*. MA thesis, Social Anthropology. University of Cape Town.

Weheliye, A. 2014. *Habeas Viscus: Racializing Assemblages, Biopolitics, and Black Feminist Theories of the Human*. Durham, NC: Duke University Press.

Wellisch, E. 1952. Children without genealogy — a problem of adoption. *Mental Health*. 12(1):41-42.

Westphal, L. & Bendikson, K. 2005. Evaluation of urine toxicology screens in an oocyte donor population. *Journal of Assisted Reproduction and Genetics*. 22(2):101-102.

Whittaker, A. 2015. Technology, Biopolitics, Rationalities and Choices: Recent Studies of Reproduction. *Medical Anthropology*. 34(3):259–273.

Whittaker, A. & Speier, A. 2010. "Cycling overseas:" Care, commodification, and stratification in cross-border reproductive travel. *Medical Anthropology*. 29(4):363-383.

Whittaker, A., Inhorn, M. & Shenfield, F. 2019. Globalised quests for assisted conception: Reproductive travel for infertility and involuntary childlessness. *Global Public Health*. Forthcoming.

Willoughby-Herard, T. 2007. South Africa's poor whites and whiteness studies: Afrikaner ethnicity, scientific racism, and white misery. *New Political Science*. 29(4):479-500.

Windt, M.L. 2004. Comparative analysis of pregnancy rates after the transfer of early dividing embryos versus slower dividing embryos. *Human Reproduction*. 19(5):1155-1162.

Wong, K.-A. 2017. Donor conception and "passing," or; Why Australian parents of donor-conceived children want donors who look like them. *Journal of Bioethical Inquiry*. 14:77-86.

Woodward, K. 2009. *Statistical Panic: Cultural Politics and Poetics of the Emotions*. Durham, NC: Duke University Press.

Woodward, K. 1999. Statistical panic. *differences: A Journal of Feminist Cultural Studies*. 11(2):177-203.

Yang, S.-H., Wu, C.H., Chen, Y.C., Yang, C.K., Wu, T.H., Chen, P.C. & Tsai, H.D. 2018. Effect of morphokinetics and morphological dynamics of cleavage stage on embryo developmental potential: A time-lapse study. *Taiwanese Journal of Obstetrics & Gynecology*. 57(1):76-82.

Yuzpe, A.A., Liu, Z. & Fluker, M.R. 2000. Rescue intracytoplasmic sperm injection (ICSI) — salvaging in vitro fertilization (IVF) cycles after total or near-total fertilization failure. *Fertility and Sterility*. 73(6):1115-1119.

Zegers-Hochschild, F., Adamson, G.D., de Mouzon, J., Ishihara, O., Mansour, R., Nygren, K., Sullivan, E. & Vanderpoel, S. 2009. International Committee for Monitoring Assisted Reproductive Technology (ICMART) and the World Health Organization (WHO) revised glossary of ART terminology, 2009. *Fertility and Sterility*. 92(5):1520-1524.