

Introduction

ASSISTED REPRODUCTIVE TECHNOLOGIES A THIRD PHASE?

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The story of assisted reproductive technologies (ARTs) is a remarkable one.¹ That sperm and ova can be taken from a man and a woman, brought together in a petri dish to achieve conception and then implanted back into the womb of a woman where the early stage embryo will come to term, was a technical feat that was to have profound consequences. With the birth of Louise Brown in 1978 the era of the 'test-tube baby' had begun, and with it the emergence of a powerful confluence of biomedical, social and economic interests. Coupling the desires of those who are involuntarily childless with medical and pharmaceutical interests has led to an inexorable rise in the visibility and availability of ART services. Moreover, it has propelled their assimilation and acceptance into everyday worlds of family formation; the exceptional has become ordinary, or at least as ordinary as any human conception can ever be. It was reported at the European Society of Human Reproduction and Embryology's annual meeting in Istanbul in 2012 that some five million babies had been born around the world with the aid of ARTs (ESHRE 2012; Franklin 2012).

Echoing an earlier prediction made by Paul Rabinow in relation to the new genetics, the power of ARTs to reshape ideas of identity and relationality is such because developments of this kind

'will be embedded throughout the social fabric at the micro-level' (Rabinow 1996: 100). But the diffusion of ARTs has other consequences. Beyond the elementary assistance offered to a husband and wife using their own gametes to achieve conception are a plethora of other possibilities. Third-party provision of sperm, ova or fertilised embryos used with techniques such as in vitro fertilisation (IVF), intra-uterine insemination (IUI) and intra-cytoplasmic sperm injection (ICSI) bring novel relational possibilities. For example, mothers may donate eggs to their daughters thereby creating children who are both their 'grandchildren' and 'children' at the same time, as in the Melanie Boivin case.² Male couples may employ the services of surrogates and egg donors to produce offspring that are biologically, socially and economically their own, as in the case of Tony Barlow and Barry Drewitt.³ Further possibilities are added given that gametes and embryos can be cryopreserved for use at some point in the future, enabling posthumous conception to take place, as in the case of Diane Blood.⁴ These combinations take reproduction and parenthood beyond existing norms and expectations. As such, they pose significant challenges to prevailing ethical, legal and religious orthodoxies. Not least of these challenges is the potential for commoditisation of gametes and embryos, which threatens to dislodge these substances from their positions within existing schemes of meaning and value.

The anthropological literature on ARTs in the UK and the US has provided groundbreaking accounts of these encounters between novelty and convention in the realms of kinship, family and reproduction (Strathern 1992a, 1992b; Edwards 1993; Franklin 1997; Thompson 2005). These accounts described what we might think of ARTs in their first phase, a period approximating the 1980s and 1990s, in which extra-corporeal conception became available to a relatively small number of people in Europe, North America and the Middle East. Services were available, but mostly in the private sector for those able to pay substantial sums for their own treatment.

The second phase of ARTs, from the late 1990s on, saw the spread of IVF across the globe, with take up mostly by elites through private sector provision. A 'Euro-American' perspective on ARTs was soon augmented by accounts of IVF from a wider range of countries. Accounts of IVF cultures around the world include Israel (Kahn 2000; Nahman 2013), Italy (Bonnacorso-Rothe 2009), Spain (Orobitg and Salasar 2005), China (Handwerker 2002), Ecuador (Roberts 2006), Egypt (Inhorn 1994a),

Lebanon (Clarke and Inhorn 2011), Iran (Tremayne 2006, 2009), India (Bharadwaj 2008) and Sri Lanka (Simpson 2001a, 2004a, 2004b, 2004c, 2005). These ethnographies illuminate the distinctive forms that parenthood and relationality take when ARTs become available in diverse cultural settings. With the exception of Israel, where publicly funded fertility services sit within a wider policy of state-supported pro-natalism, access to ARTs in the countries listed above is mostly the preserve of those who can afford to pay for services. The commercial orientation of ART provision has rendered these services an important site of inequality in terms of class, race, ethnicity and gender, and as such are an important contributor to what Colen earlier identified as 'reproductive stratification' (Colen 1986). To date then, the study of ARTs in the second phase has mostly focused on a relatively small number of global elites accessing services commercially, either in their own countries or following travel abroad (Ginsberg and Rapp 1995; Culley et al. 2011). Set against the global burden of infertility, one could argue that this focus has produced a disproportional effect. ARTs, accessed by the few, have influenced the reproductive desires of the many, both as an icon of technologically assisted reproduction and as a source of powerful rhetoric about medicalised reproduction. Media coverage plays a major part in this process, continuing to 'shape reproductive expectation and desires, particularly when reproductive "miracles" become the focus of media frenzy' (Inhorn and Van Balen 2002: 5).

Yet, this picture is changing, and it is aspects of this change that we explore in this volume. Although at an early stage, it appears that delivery of ARTs is spreading beyond the private sector, both in first world and third world settings, as these technologies become increasingly recognised as part of a standard repertoire of medical assistance for infertility. Increasing accessibility and acceptability mean that far from being rare and exceptional, ARTs are, for an ever-widening constituency, becoming part of routine expectation. This we refer to as ARTs in their third phase – an extension of access and availability that further integrates ARTs into infertility treatment across the globe. We have identified two stepping-off points for our interest in this important phase in the development of ARTs. The first concerns publicly funded access to ARTs in the UK, and the second, the move to recognise infertility as a disease (rather than mere misfortune) and to mobilise treatments to address it as such in developing world settings.

Stepping-Off Point One: Publicly Funded Access to ARTs in the UK

In recent decades, infertility and its consequences have become increasingly visible in the UK. In the 1980s it was estimated that one in six British couples who wished to have children were unable to do so (Hull, Galzener and Kelly 1985). More recent estimates have resulted in predictions of an 'infertility time bomb', with as many as one in three couples having difficulty conceiving.⁵ Amongst the growing list of contributory factors are later age of first pregnancy (often blurring the distinction between voluntary and involuntary childlessness), an increase in sexually transmitted diseases, childhood obesity and a consequent rise of conditions such as polycystic ovary syndrome. Involuntary childlessness is a cause of major distress, bringing significant physical, emotional and social consequences. Failing to conceive when there is an explicit desire to do so is also a condition with which others easily identify, and is often construed in terms of desperation and tragedy (Franklin 1997). Furthermore, a widespread response to this condition is a willingness to go to considerable physical, emotional and economic lengths to achieve a pregnancy that will result in a child that might be thought of in some way as one's own.

With the development of ARTs there has been a growing recognition that infertility is not merely an unfortunate personal circumstance but a recognised condition for which a growing range of treatment options exist and, furthermore, that policies should be formulated and resources committed to its alleviation.⁶ As a consequence, in the UK over the last twenty years, the use of assisted reproductive technologies has gone from being something that was exceptional and rare to being relatively commonplace, with points of access available across a range of National Health Service (NHS) and private clinics.⁷ To this end, in 2004 the UK's National Institute of Clinical Excellence (NICE) issued guidelines for NHS hospitals on the provision of fertility treatments. If certain conditions were met then patients could expect up to three cycles of IVF to be provided and funded by the state.⁸

This move can be seen as part of a wider pan-European trend to support infertility services through the public purse. A recent survey by the European Society of Human Reproduction and Embryology (ESHRE) reported that 1,051 clinics operating in thirty-six European countries (three more than in 2007) reported 532,260 treatment cycles, representing a 7.9 per cent increase

in the activity since 2007 (Ferraretti et al. 2012). Furthermore, monitoring by ESHRE suggests that more ART cycles per million of population were performed in countries where public funding was more easily available. For example, in Belgium and Denmark, where state funding is generous, 2,479 and 2,450 ART cycles per million of population were recorded in 2008. In Germany, Italy and UK, where state funding is less generous, the number of cycles per million were 801, 807 and 825 respectively. These figures have led health economist Mark Connelly to suggest that state policies for the funding of fertility treatment through public reimbursement has a direct influence on national birth rates.⁹ At a time when fertility rates have declined below replacement levels across Europe, these findings have important consequences, suggesting that ARTs may have a role to play in stabilising population ageing/decline by addressing unmet need for fertility treatment.

Our interest in the specifics of these broader demographics of infertility began with an ESRC-funded project which set out to investigate the ways in which British Pakistani Muslims understand and negotiate involuntary childlessness with particular reference to the solutions offered by the ARTs.¹⁰ In this research, we considered how the explicit intention to provide greater access to infertility treatments was received and acted upon by ethnic minority groups, and specifically those from the Pakistani Muslim community. As a culturally distinct community, Pakistanis are typically characterised as conservative in their patterns of kinship and community, family formation and reproductive behaviour, and their ideas about the place of children in the family (Berthoud 2005; Thapan 2005). Most Pakistanis also have a strong relationship with Islam as a guide to action generally, but particularly when faced with adversity. We were interested to learn more about the reproductive problems experienced by couples from this community, their ways of dealing with them and the issues faced by service providers in ensuring equal and appropriate access to treatments.

The research was carried out at a time when, despite a small upturn, low and late fertility looked set to be sustained in the UK, along with the rest of Europe (Goldstein, Sobotka and Jasilioniene 2009). However, along with British Bangladeshis, British Pakistanis continue to have much higher fertility rates than the UK national average: close to three children per woman (Coleman and Dubuq 2010). British Pakistanis in particular have low levels of childlessness and higher progression to third and higher-order

births than the general British population (Modood 1997; Penn and Lambert 2002; Sobotka 2008). Maintenance of high fertility is often attributed to a strongly pro-natalist ideology and normative pressures to bear children (although, as we show elsewhere, this is not necessarily the case uniformly [Hampshire, Blell and Simpson 2012a]). However, high fertility at a population level does not equate with uniform fertility, and rates of infertility among the UK's South Asian populations also appear to be elevated, due in part to a relatively high prevalence of polycystic ovary syndrome-related infertility (Rodin et al. 1998). Where pro-natalism is strong, the consequences of impaired or delayed fertility can be all the greater for individuals who experience reproductive disruption (Inhorn 2003c; Hampshire, Blell and Simpson 2012b). For couples who find themselves in this situation, the suffering that ensues can be acute. As we go on to demonstrate, the quest for resolution is not merely biomedical but connects with a tangle of interests that are cultural, moral and economic.

Stepping-Off Point Two: ARTs in Developing World Contexts

The second stepping-off point is, on the face of it, a long way from the first. At the workshop held at the end of our 'Pakistani Muslims and ARTs' project, it was apparent from the contributions of Frank Van Balen, Johanne Sundby and Willem Ombelet regarding reproductive technologies in lower-income countries that there were important connections. These presentations led us to think more carefully about the availability of ARTs in the economically developing world and a growing recognition of 'the reproductive desires and dilemmas of infertile women and men living outside the West' (Inhorn and Van Balen 2002: 6; see also Vayena et al. 2009). The discussions that followed, particularly with the UK fertility consultants present, suggested that many of the problems of infertility and likely solutions in resource-poor communities were ones that had resonances in their own practices in the UK. Suffice it to say that similar challenges and issues emerged in both contexts, despite some very different drivers for ARTs operating in better-resourced settings in the global north. A key difference is the exceptionally high levels of infertility found in many resource-poor settings (Inhorn 2009). Fertility impairment is in turn caused by the prevalence of sexually transmitted infections, high numbers of unsafe abortions and

frequent postpartum pelvic infections, all of which contribute to high rates of tubal factor infertility that are two to four times higher than in other parts of the world (*ibid.*). Many of the conditions prevalent in the developing world could be avoided through improved public health measures. However, once these conditions are in place they are difficult to treat; prevention is infinitely better than cure. ARTs offer one of the few solutions should fertility be disrupted by one of these conditions, and much work has been carried out recently into the development of low-cost treatments (Ombelet and Campo 2007; also see this volume). The issue of low-cost IVF was of particular interest to the UK consultants attending the workshop when considering access to services in the UK.

An important event in recognising the importance of affordable access to fertility treatments in resource-poor settings was the conference organised by the ESHRE Special Task Force on Infertility in Developing Countries, held in 2008 in Arusha, Tanzania (Ombelet and Van Balen 2010; Ombelet, this volume). This multidisciplinary conference brought together representatives of the most significant organisations operating in the infertility field, along with practitioners and academics. One of the outcomes of the meeting was the setting up of a series of pilot studies in which affordable treatments for infertility were trialled in Genk, Belgium, with the eventual aim of introducing these into resource-poor areas (Johnson, Cohen and Grudszinskas 2014; Ombelet 2014; Van Blerkon et al. 2014).

The project of providing assistance to those experiencing reproductive disruption in developing-world settings has elicited concerns and criticism throughout its history. It is argued that ARTs are not a priority in resource-poor settings, where population pressures are high and there is likely to be poor medical infrastructure, regulation and quality control (Macklin 1995; Okonofua 1996; Vayena et al. 2009). Combined with the low success rate of ARTs, there is likely to be major disappointment for those facing infertility, given that expectations will be high and results sparse (Edouard and Olatunbosun 1997). Finally, feminist concerns identify a continuing focus on women's procreative roles in ARTs as symptomatic of an abiding patriarchy and the exploitation and appropriation of women's bodies (Rapp 2001). Recognition of the plight of those with reproductive difficulties has not entirely escaped international policy. The International Conference on Population and Development (ICPD) held in Cairo led to United Nations Programme of Action 1995, which recognised 'the rights

of men and women to choose the number, timing and spacing of their children by calling for reproductive health programmes to include the prevention and appropriate treatment of infertility' (ICPD 1994; also see Nachtigall 2006: 871). However, as Ombelet and others in this volume suggest, infertility remains something of a Cinderella issue, which has failed to grab the attention of major donors or achieve prominence in the Millennium Development Goals-driven global health agenda.

Three Themes in the Third Phase of ARTs

Both of the above stepping-off points suggest the beginning of an opening up of ARTs to new constituencies in terms of ethnicity, geography, education and class. With this widening of access, reproductive 'assistance' is summoned in very diverse settings in terms of lay beliefs about procreation, body and relationships. Here we see the biomedical responses to frustrated reproductive desire framed within evermore diverse notions of family, kin and community, and shaped by distinct configurations of morals and values. In this respect, we might simply record that ARTs become even further embedded in day-to-day life. However, we would like to draw attention to three themes that provide significant points of overlap between the two very different stepping-off points identified above. These are the fertility–infertility dialectic, globalisation, and a form of moral pioneering that entails what we have termed 'the bricolage of bioethics'.

The Fertility–Infertility Dialectic

A key feature of many of the populations that are being reached in a third phase of ARTs is that they already appear to have high levels of fertility. This may well be true at a population level but, for those who have the misfortune to encounter 'barrenness amid plenty' (Van Balen and Gerrits 2001), the consequences of infertility can be seriously amplified by what Inhorn has referred to as the fertility–infertility dialectic: a situation in which the prevalence of infertility is often greatest where fertility is the highest (Inhorn 1996, 2003b, 2003c, 2007b). The problem is further compounded by the fact that many of the steps taken to increase fertility are the very things that might impair it (for example, unprotected sex and sex with multiple partners, both of which increase the likelihood of infertility linked with sexually transmitted infection). Where

there are strong expectations surrounding fertility, the occurrence of infertility can be particularly catastrophic, leading couples into a relentless 'quest for conception' (Inhorn 2003c: 1838). Furthermore, experiences of infertility may be structured by gender, social class, age and ethnicity, which can interact to compound the suffering and disempowerment of childless women, particularly those with few other options for gaining social status and security (Inhorn 1996: 2; Riessman 2000, 2002).

A perception that emerges from this paradox in populations with relatively high fertility (including the UK Pakistani Muslim context and many other contexts, particularly in the 'developing world') concerns the issue of fertility control in populations that are already seen as over-producing. The attribution of 'hyper-fertility' to some populations means that infertility is either ignored or even welcomed by policymakers as a 'solution' to overpopulation (Van Balen and Inhorn 2002; Greil, Slauson-Blevins and McQuillan 2010; Ombelet this volume). The use of ARTs in these contexts is also seen as an unhelpful distraction from other more pressing health priorities that may afflict such communities, such as high rates of maternal and child mortality, and a heavy burden of infectious diseases like HIV, TB and Malaria (Macklin 1995; Okonofua 1996): 'infertility is relatively unimportant in low-resource settings where fatal and contagious diseases remain uncontrolled' (Vayena et al. 2002: 13; also see Van Zandvoort, de Koning and Gerrits 2001). Measures aimed at increasing fertility in such settings might appear to be counter-intuitive when population control and lack of effective contraception pose serious challenges to public health and well-being.

Such views are further reinforced in the UK when set against demographic concerns about the rates at which different groups reproduce.¹¹ Anxieties have recently been further raised by suggestions that there is a close link between religion, ethnicity and fertility, such that those who are most strongly affiliated to a religious way of life are also more likely to have the biggest families – secularists it would seem do not reproduce terribly well (Kaufman 2010). In other words, 'society', and prevailing views of fertility therein, provide an important context within which to situate discussions about infertility among ethnic minority communities in Western countries, as well as among the poor in developing-world ones.

Yet, in both these contexts, it is clear that what is the subject of erasure when viewed at the level of populations and demography

is all too visible when viewed at the level of families and individuals (Vayena, Rowe and Peterson 2002). In otherwise 'high-fertility' settings, the social, psychological and economic impacts of infertility impacts are both significant and disproportionate (Gerrits 1997; Bhatti, Fikree and Khan 1999; Riessman 2000; Bharadwaj 2003; Van Balen and Bos 2009; Nahar 2010). In this volume we explore the finer grain of these contradictions and the ways in which ARTs become woven into prevailing ideas about fertility and infertility in settings that fall outside of 'two-will-do' norms and practices.

Reproductive Technologies as Global Form

In December 2008, seventy-two clinicians, scientists, epidemiologists and social scientists gathered together at the World Health Organization (WHO) headquarters in Geneva, Switzerland, to work out an agreed vocabulary to be deployed worldwide when using ARTs (Zegers-Hochschild et al. 2009). The driver for this initiative was the need to 'benchmark' and 'standardise' terms and definitions used in ART delivery and evaluation. Having a common terminology is seen as crucial to 'monitoring the availability, efficacy, and safety of assisted reproductive technology' (ibid.: 1521). The application of ARTs in increasingly diverse social, cultural and economic settings makes evermore pressing the need to establish a backdrop of standardised definitions. Without this lingua franca, the mutability of ARTs and their adaptation to different settings will be impeded. Yet, the work of standardisation encompasses far more than mere vocabulary, and extends into training, clinical procedures, appliances, techniques and the drugs used to overcome involuntary childlessness.

In short, the field of ART research, development and delivery is presently characterised by the increasing mobility of personnel, technologies and information. In considering these developments, Knecht and colleagues draw attention to 'reproductive technologies as global form' (Knecht, Beck and Klotz 2012). In so doing, they move beyond local cultures of ARTs and bring into focus an assemblage that is both global and highly influential (Ong and Collier 2005). As this assemblage extends and consolidates, a third phase in the development of ARTs becomes increasingly visible. Speed of diffusion and the proliferation of connection mean that ARTs take on a form that is transnational and distributed with providers and consumers operating outside of state boundaries in the delivery of treatments. Beck, for example, describes the ways in which fertility

laboratories in Cyprus are connected by monitors to sites in North America, enabling clinicians to consult and seek advice from more experienced colleagues in the United States. As such, national boundaries appear permeable and incidental to the operation of IVF delivery (Beck 2012). In the same collection, Simpson describes how IVF was established in Sri Lanka in collaboration with international fertility teams. Part of the justification put forward by doctors for establishing services in the country was that access would be widened; those in need of treatment would no longer have to travel abroad and pay overseas rates. Nonetheless, oversight by established UK fertility teams and adherence to international guidelines such as those of the HFEA remained essential for claims made about the comparability and hence the quality of local provision (Simpson 2012). These examples point to an ever-widening repertoire of possibilities for the take-up of knowledge of how to practise ARTs and the markets for equipment and pharmaceuticals on which this diffusion relies. Standard forms of service delivery are thus taken up against diverse legal, demographic and public policy contexts and distinctively local configurations of kinship, gender and well-being.

Bioethical Bricolage and Moral Pioneering

In recent years, public concerns about the ways in which emergent biotechnologies are entering into private lives is currently captured in the field designated as bioethics. As a quasi-secular and liberal discourse on values and meaning in plural societies, bioethics is used as a framework within which to manage complex and sometimes competing claims as to what constitutes progress. In the various contexts that are described in this collection, reproduction emerges as a central preoccupation and, moreover, one linked fundamentally to human flourishing as expressed existentially through ideas of completeness, connection and continuity (van der Geest and Nahar 2013). Not to be able to reproduce when there are strong pressures to do so invites both speculation (why me?) and action (what can we do by way of remedy?). What actions are permissible and encouraged can easily be read off from custom, belief and tradition. For example, although fertility rites and the use of medicines to achieve conception are common in many societies, fostering, adoption, polygamy and other such strategies to acquire children might be resorted to when these fail. Ways of ensuring social reproduction when biological reproduction fails are as old as human society itself. However, where ARTs are concerned, what is forbidden and proscribed is not always clear and is likely to be the subject of debate

and negotiation. Evaluating possible courses of action in the face of unwanted infertility invites consideration of multiple reference points of legitimation, engenders novel precedents, and stimulates creative interpretations, all of which are likely to be adduced to bring orthodoxy into line with what Inhorn once referred to as 'immortality desire' (Inhorn 1994a). The result is something akin to the bricolage made famous in Levi Strauss's account of mythological thought and the human imagination (Levi-Strauss 1966). In this view, the human imagination does not operate with a blueprint made up of rules that are straightforwardly observed, but actively and creatively fashions meaning out of diverse and readily available sets of symbolic resources. The resultant forms have the character of being cobbled together in the manner of a contraption that mostly functions adequately rather than a well-built machine that is designed for purpose.

In this regard, we are keen to draw attention to the ways in which the reception of ARTs inspires experimentation and pioneering in the quest for meaning. Infertile couples, their wider families, clerics, physicians and other interested parties engage in the deconstruction and reconstruction of meaning in order to arrive at workable models for how to make sense of misfortune and its remedies. The book thus brings into focus examples of the co-production of moral worlds in which the use of ARTs figures as an acceptable strategy for individuals, families and communities to deal with the distress that comes with unwanted infertility. Through a variety of ethnographic approaches we examine the kaleidoscope of influences that feature in a quest not merely for conception, but for a morally situated conception.

In focusing on the ways in which ARTs are coming within the reach of new constituencies as defined by socio-economic status, ethnicity and geography, we thus seek to move beyond a model that posits a backdrop of standardised delivery in front of which cultural diversity is widely and often problematically acted out. In considering new and emerging arena of engagement with ARTs throughout the world we draw attention to the flow of ideas in both directions. Beliefs and practices designated as 'traditional' or 'cultural' are rendered permeable and labile when individuals are faced with reproductive challenge and the novel solutions on offer. Conversely, medical practices are subject to variation and modification in ways that belie the standard models of clinical and ethical practice when rolled out in culturally and economically diverse contexts.

The Book

This book is divided into three parts, each of which begins with an analytical commentary on the content and cross-cutting themes of the chapters. A novel experiment in the book is to conclude each part with a commentary from those practising in the fields that we have described.

The first part takes up the theme of engagement with ARTs not just as a therapeutic encounter but also as a kind of moral journey. Consistent with the metaphor of journeying is the idea of people moving into new conceptual terrains as ‘pioneers’ for whom techno-scientific innovation initiates decision making that, in cultural terms, is as risky as it is novel (Rapp 1988). ARTs in the third phase operate in settings in which frameworks of meaning are typically partial, contradictory and emergent. In her overview, Inhorn invites us to consider ‘what is most at stake’ (to use Kleinman’s [2006] terminology) when novel technologies penetrate the diverse local moral worlds of contemporary Islam. The chapters that follow illustrate the nature of the quest for accommodation and legitimation of ARTs within the context of Islam in the broadest sense. However, detailed expositions of the practice of ARTs in religiously plural Lebanon (Clarke), among Pakistani Sunni Muslims in England (Simpson, Blell and Hampshire) and among Shias in Iran and the UK (Tremayne) highlight the variability that underlies any simple claims to an Islamic bioethics or intra-national, let alone inter-national public consensus – a variability that is further underlined by Mahmoud’s reflection on his work in the UK as a Muslim practitioner of gynaecology and reproductive medicine. Each of the pieces throws light on the ways in which religious, legal and customary authority is woven into debate, consultation, opinion and decision making to produce workable legitimation of present and future actions regarding family formation. In their effects, ARTs are not simply grafted onto stable forms of family and kinship but are themselves part of the shifting mosaic of relationality in everyday life. Our intention in bringing these chapters together is thus not to essentialise or exceptionalise Islam in relation to the ARTs; indeed, quite the opposite. By juxtaposing pieces on groups of people who all define themselves broadly as Muslims, we see the variation and negotiation that emerges as individuals, couples, families and others encounter and navigate newly emerging and local moral worlds.

In the second part, attention turns to ARTs and infertility in resource-poor areas, with examples drawn from Bangladesh

(Nahar), Botswana (Bochow) and Mali (Hörbst). It opens with an introduction by Trudie Gerrits who, drawing together insights from the other chapters together with reflections from her own recent work in infertility clinics in Ghana, considers what new kinds of questions emerge when ARTs come within reach of new populations, and the reconfigured forms of stratified reproduction and biological citizenship that might result. The chapter by Willem Ombelet then offers a careful reflection on the politics of access to ARTs in the developing world by arguing that it is no longer acceptable that ARTs remain the preserve of those who can afford them. Considering the burden of involuntary childlessness in low-income settings, Ombelet contends that infertility should no longer be seen as an individual medical problem but be recast as a major public health issue and accompanied by a global campaign to alleviate it. His arguments are clearly articulated in terms of reproductive autonomy, social justice and equity as enshrined in World Health Organization strategy regarding family planning. The ethnographic chapters that make up this part each describe ARTs within broader cultural, economic and historical trajectories, and specifically the very contexts in which Ombelet envisages a widening access to ARTs. Papreen Nahar describes how knowledge of infertility treatments in Bangladesh circulate between rural and urban contexts with ARTs featuring as an important imaginary when dealing with infertility – that is, thought about by many but accessed by only a few. The account of ARTs in Gaborone, Botswana, by Astrid Bochow draws on biographies of women of different ages to plot how infertility treatment and ARTs have become established over time. Similarly, Viola Hörbst analyses detailed ART stories of women in Bamako, Mali, to reveal the relationship between the social and financial status of women and their strategies for accessing fertility treatment. In both chapters, the pattern of ART use is initially one of elites accessing treatments outside of the country followed by the development of local provision for such elites and, subsequently, a blending of ART treatments with a range of local provisions. The twist in the tail in Hörbst's account however is the loss of confidence and a shift away from local Malian providers back into the global marketplace of fertility treatment. Both studies highlight the ways in which financial and familial interests shape individual strategies for engagement with ARTs, and in so doing provide important contextual detail regarding the reshaping of reproductive relations in the third phase of ARTs. Finally, the commentary by Thilina Palihawadana

and H.R. Seneviratne offers some important insights and reflections into the challenges and dilemmas that private practitioners might confront when establishing ART provision.

The extension of ARTs to new populations and new subgroups (ethnic, socio-economic) within populations raises many questions about interactions between health care professionals and increasingly diverse recipients of these technologies. The third and final part of this book explores the ethics of care from the perspective of ethno-religious communities. Here novel reproductive interventions are taken as the focal point in thinking about professional response to ARTs in diverse cultural and socio-economic settings. The notion of discrete moral worlds that map neatly onto group or community is brought into question in chapters by Sangeeta Chattoo, and Nicky Hudson and Lorraine Culley, in ways that are illuminating for the notion of ARTs in the third phase. Both pieces reflect on the place of ethno-religious communities in the context of UK society in general and health policy in particular, and each sounds a cautionary note when it comes to over-investing in the idea of bounded 'cultures' within which a discrete and ordered morality prevails. Each piece extends the arguments made in the preceding parts, drawing attention to the permeability and scalability of the categories and classifications likely to be in circulation at the interface between health care providers and the communities they serve. Chattoo goes beyond 'minority' groups in order to examine the way that the category 'South Asian' is used by medical professionals in relation to questions of infertility, privacy and autonomy among such groups. Central to her concerns are questions of just what constitutes 'culturally competent care' in the context of NHS delivery, what this tells us about difference, and how in political and ideological terms it is currently being managed. In similar vein, Hudson and Culley, who explore the perceptions of different South Asian 'ethnic communities' (Muslim, Sikh and Hindu) on third-party gamete transactions, show that, while religious and ethnic identities were important in shaping ideas and beliefs, other dimensions such as gender were very important and cut across ethnicity and religion. In her introduction to this part, Alison Shaw invites health professionals to develop 'a sort of *moral imagination*' that is informed by an understanding of the different kinds of values that might be encountered in a culturally and linguistically diverse population, but not to make assumptions based on stereotypes. Crucially, this entails having a critical awareness of the socially constructed nature of one's own values

and practices. This call is taken up in the final commentary in the volume by two junior doctors, both of whom incorporated a medical anthropology master's programme into their medical training. Ana Liddie Navarro and Miriam Orcutt describe some of the challenges they face personally when trying to develop this kind of cultural sensitivity and competence as junior doctors in a health system that is relatively inflexible and tightly constrained by time pressures.

In this collection we bring into focus a third phase in the development of ARTs in which access to these extraordinary technologies is beginning to move beyond global elites and is accessed by evermore diverse cultural and socio-economic constituencies using evermore novel strategies. In sketching out the contours of what this development looks like, we highlight some of the ethical and practical complexities that arise in the quest for parenthood in the twenty-first century.

Notes

1. The preferred acronym throughout this piece is ART rather NRT (New Reproductive Technology) as we wish to emphasise the increasing routinisation of assistance in reproductive failure rather than novelty *per se*.
2. In this case a Canadian woman secured legal permission for a future donation of her eggs to her daughter, who had been rendered infertile as a result of being born with Turner Syndrome (Edwards 2009). Retrieved on 8 August 2011 from <http://www.nature.com/news/2007/070702/full/news070702-5>.
3. In this case, two gay men have formed a family of five children using their own sperm and the services of egg donors and surrogates. Retrieved on 8 August 2011 from <http://www.guardian.co.uk/life-andstyle/2010/jul/17/gay-fathers-drewitt-barlow>. Also see Simpson 2004b for a novel South Asian reading of this case.
4. In the case of Diane Blood, sperm was extracted posthumously from her husband, and using cryopreserved sperm she was able to produce two children over a period of years who were the biogenetic offspring of her dead husband (Simpson 2001b).
5. 'Infertility time bomb' warning given at a 2005 European Fertility Conference by Professor Bill Ledger of the University of Sheffield. Retrieved on 1 June 2011 from <http://news.bbc.co.uk/1/hi/health/4112450.stm>.

6. WHO, <http://www.nice.org.uk/nicemedia/pdf/CG011publicinfoenglish.pdf>.
7. The UK's Human Fertilisation and Embryology Authority reports that in 1991, when the authority was established and data collection began, there were 6,146 IVF patients who underwent 6,609 cycles. By 2006 these figures had risen to 18,183 and 22,343 respectively (HFEA 2007). The figure reported by the HFEA for 2010 was 45,246 patients undergoing 57,652 cycles. Retrieved on 12 July 2012 from <http://www.hfea.gov.uk/ivf-figures-2006.html>.
8. The target of three cycles on demand has mostly become an aspiration, with many trusts being unable to afford any treatments at all (for example, see: 'Rationing Babies: IVF is still a Postcode Lottery'. Retrieved on 30 May 2014 from <http://www.independent.co.uk/lifestyle/health-and-families/health-news/rationing-babies-ivf-is-still-a-postcode-lottery-1682308.html>).
9. 'Funding IVF in the UK is Feeble': a BBC News report on comments made by Dr Mark Connelly at ESHRE conference in July 2012. Retrieved on 21 May 2013 from <http://www.bbc.co.uk/news/health-18675858>.
10. The Pakistani Muslim research was carried out with the aid of a grant from the UK's Economic and Social Research Council (RES-000-23-1488).
11. For example, see newspaper article headlined 'Whites Will be an Ethnic Minority in Britain by the End of the Century' (Browne 2000).

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