

Introduction: Gender and Reproductive Technologies in East Asia

Adele E. Clarke

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Abstract This special issue of *EASTS* examines reproductive technoscience, gender, and the formation of East Asian modernities across the twentieth and into the twenty-first century. We begin our introduction with a brief overview of social science scholarship to date on reproductive topics. We then turn to emergent trends: going to and coming from beyond the West, complicating the issues, and intensive localizing and comparative research. Next, we discuss themes that cut across considerations of gender, reproductive technologies, and related issues in East Asia: issues of imperialisms and colonialisms as roots and contexts, postcolonial and nationalist forms of embeddedness, feminist theories of gender and transnationalism, and relations of gender and reproductive technologies to biological citizenship. Last is an introduction to the articles in this special issue.

Keywords Gender · Reproductive technologies · East Asia · Reproductive technoscience · Contraception · IVF · Infertility · Stem cells · Population · Family planning

1 Introduction

Reproductive technologies broadly conceived have been lively topics in science, technology, and medicine studies (hereafter ST&MS) for about three decades, as social science recognition increased that reproduction “matters” as well as production. In East Asian contexts, reproductive technologies are particularly interesting and important points of entrée for understanding modernity, gender, nation-formation, transnationalization/globalization, and new forms of relations across technologies. This special issue of *EASTS* examines reproductive technos-

A. E. Clarke (✉)
UC San Francisco, San Francisco, CA, USA
e-mail: Adele.Clarke@ucsf.edu

science and the formation of East Asian modernities across the twentieth and into the twenty-first century. Focus is on encounters and negotiations in the complex travels of reproductive technoscience—between East Asia and the West and within East Asia. Emerging networks of reproductive technoscience and their consequences for local and transnational policies, politics, identities, and subjectivities are discussed.

Much if not most of ST&MS scholarship on gender and reproductive technologies has centered on the West. This special issue of *EASTS* is part of a wave of new scholarship that begins to redress this situation. Given the relative absence of research to date on reproductive technologies in East Asia, our main goal for this special issue is to provoke further research by suggesting possibly useful themes and frameworks and raising interesting questions and angles of vision for consideration. We especially hope to encourage comparative research that can highlight and clarify pressing questions about the salience of cultural and geopolitical histories and boundaries. That is, we hope that future research will examine some of the thorny boundaries between commonalities and differences within *and* across specific East Asian situations, as well as within and across gender and particular reproductive technologies—and other technologies—as they have been taken up and put to work.

Particularly interesting about reproductive technologies and modernities are their capacities to act simultaneously on both poles of biopower—the anatomo-politics of the individual human body and the biopolitics of collectives and/or populations—in ways that may not be easily teased apart (e.g., Rabinow and Nikolas 2006). That is, reproductive technologies are often viewed as addressing individual women's (and sometimes men's) and families' reproductive situations. However, such technologies may also embody and amplify colonialism, imperialism, the nation, development, cold war and modernity writ large. It is crucial to grasp these complexities to understand East Asian biopolitics more broadly.

The category of reproductive sciences and technologies commonly includes contraception and birth control, family planning and population control, abortion and menstrual regulation, infertility and assisted reproductive technologies, surrogacy, gynecological and urological/andrological sciences and medicine, obstetric sciences and technologies of pregnancy and birth, sex selection technologies, genetic testing (especially preconceptual and prenatal), eugenics, technologies of genetic improvement, and stem cell research and human cloning.

We would also argue that “traditional” or “premodern” forms of intervention in reproductive processes need to be considered as reproductive sciences and/or technologies along with more modern and often but not only Western-origin reproductive technoscience. There are three key reasons. First is the classic ST&MS sociology of knowledge point that innovative sciences, technologies, and medicines have been produced by most if not all human cultures (e.g., Watson-Verran and Turnbull 1995). Second, in concrete practices pursued all over the world, people draw upon and utilize traditional, premodern, and modern sciences and technologies and medicines heterogeneously. In short, practices are hybrid and, to be adequate, empirical research needs to take practice carefully into account (e.g., Schatzki et al. 2001). Last, traditional/premodern modes of reproductive intervention also travel widely and are also “indigenized” (Appadurai 1996), as are more modern forms.

Because there is little to date in English on traditional/premodern East Asian forms of intervention in reproductive processes,¹ this introduction focuses largely, though not exclusively, on what are usually seen as “modern” “western” reproductive technologies. Also, in this essay, works discussed by East Asian and other scholars on reproductive technologies in East Asian contexts are restricted to those published in English.

We begin with a brief overview of social science scholarship to date on reproductive topics that have taken gender seriously. This broad backdrop to contemporary work shows where this scholarship has been since c1980, provided here especially for those who have not worked in this area. We then turn to emergent trends, including going and coming from beyond the West, complicating the issues, and intensive localizing and comparative work. Next, we take up several themes that cut across considerations of gender, reproductive technologies and related issues in East Asia: issues of imperialisms and colonialisms as roots and contexts, postcolonial and nationalist forms of embeddedness, feminist theories of gender and transnationalism, and relations of gender and reproductive technologies to biological citizenship. Last is an introduction to the articles in this special issue. To aid and abet further research and ST&MS pedagogy, a partial bibliography of works in English on gender and reproductive technologies in East Asia is included in this issue.

2 Early Scholarship on Reproductive Technologies

The histories of reproductive sciences, technologies, and medicines and of people's efforts to control or manage their own and/or others' reproduction in some way are long, dense and imbricated. However, neither reproduction per se nor reproductive sciences and technologies has been a central focus of nonmedical academic disciplines. That is, the vast majority of published research and scholarship that does address reproductive topics has been part of the sciences, technologies, and medicines of reproduction. Scholarly work in the social sciences and humanities for which reproductive topics are the objects of study is far from dense. Much of it has centered on the West, and much if not most of it has been pursued by feminist scholars in sociology, anthropology and the humanities. It places women at the center of analysis.

Several (often but not always overlapping) strands of earlier scholarship were published in English on reproductive sciences and technologies.² First, early feminist reproductive scholarship often had roots in women's health movements and was especially concerned with women as users and targeted consumers of reproductive technologies, including the (over)medicalization of women's bodies (e.g., Seaman 1969; Ruzek 1978; Arditti et al. 1984; Rothman 1984; Bruce 1987; Holmes 1992).

¹ However, see, e.g., Bray (1997), Furth (1999), Leung (2006), and Shapiro (1998). There are extensive literatures on this in Chinese, Japanese, Korean, etc. Also, *EASTS* is committed to publishing now classic articles in other languages on East Asian sciences, technologies, and medicines in English. We hope that such works will include some on traditional/premodern reproductive interventions.

² Please note that we are citing illustratively here, and not attempting to be thorough. We also recognize how very partial this English language publication-based introduction is in terms of grasping the range of published scholarship on gender and reproductive technologies in East Asia.

A second and related strand of feminist scholarly work was especially concerned with reproductive technologies in their transnational travels impelled by concerns with population control, population “bombs,” and eugenics, often linked to sometimes coercive post-World War II development schemes, and often emphasizing safety aspects of contraceptive technologies (Gordon 1976/1990; Hartman 1987/1995; Correa 1994; Ginsberg and Rapp 1995; Greenhalgh 1995, 1996; Hardon et al. 1997; *Reproductive Health Matters* 1997). Here a key distinction was made between woman-controlled vs “impossible” technologies, potentially coercive reward programs, and issues of adequate medical backup (e.g., Clarke 1984, 2000; Morsy 1995; Petchesky and Judd 1998; Takeshita 2004).³

A third earlier strand consisted of feminist and other scholars in the emergent discipline of ST&MS who led the way in terms of making reproductive sciences, technologies, and medicines central topics of scholarly concern qua sciences, technologies, and medicines. Much of this work centered on the development of reproductive sciences and technologies per se, usually focusing on one technology to better grasp its specificities in relation to gender politics. This strand included works on reproductive science, endocrinology, and hormone treatments (e.g., Oudshoorn 1994; Clarke 1998), contraceptives (e.g., van Kammen and Oudshoorn 2002; Oudshoorn 1996, 2003; Clarke 1998, 2000; Dugdale 2000), infertility (Cussins 1996; Thompson 2005), prenatal genetic testing (Rapp 1999) and prenatal interventions (Casper 1998). Some works also drew important connections across reproductive technologies and/or across sites of their use (e.g., Stanworth 1987; Holmes 1992; Ginsberg and Rapp 1995; Saetnan et al. 2000). These three strands of earlier work form the backdrop against which we may view the emergent trends in scholarship on reproductive technologies discussed next.

3 Emergent Trends in Scholarship on Reproductive Technologies

Since c2000, there has been emerging what might be termed a second wave of research on reproductive technologies that benefits from developments in feminist theories of transnationalism, poststructural concerns, and ST&MS. Several trends can be seen in this more recent scholarship: going and coming from beyond the west, complicating the issues, and localized and comparative work. Please note that we can only highlight some recent directions here rather than provide an ambitious literature review.

3.1 Going and Coming From Beyond the West

While anthropologists have long studied reproductive technologies broadly conceived in nonwestern settings, this work has intensified over the past decade (for a review, see Kaufman and Morgan 2005). Moreover, work produced in nonwestern settings and/or by nonwestern scholars is both elaborating and being

³ Hysterectomy must also be considered as a reproductive technology effecting birth control as it can and has been used as such on targeted “minority” populations in the USA (Clarke 1984) and Pakistan (Towghi 2007). Whether there are similar patterns in East Asia remains to be seen.

published in English. Major works focused on reproductive technologies in nonwestern settings have tended to center on a single technology, although there are exceptions (e.g., Liamputton 2007).

Contraception, the reproductive technology most widely distributed globally, has been of particular interest, especially in relation to population control and policies (e.g., Barrett and Frank 1999; Halfon 1997, 2007). Vis-à-vis colonialism and its legacies, contraception has been studied intensely in Puerto Rico (e.g., Ramirez de Arellano and Seipp 1983; Briggs 2002; Lopez 2008), India (e.g., Hodges 2008), and Haiti (Maternowska 2006). Moon's (2005) recent study of gendered citizenship in South Korea offers a strong focus on population policy and contraception and their links to militarized modernity since 1963 (see also Cho 2008). China has been the focus of sustained scholarship. Greenhalgh and Winkler (2005) assess over a half century (1949–2004) of population policy as population was constituted as an object and governmentalized over time by emergent professional scientific disciplines in negotiation with Leninist state formations. Greenhalgh's *Making China's One-Child Policy* (2007) constructs a history of the overall development of communist science more generally, and describes how a maverick group of defense scientists who had focused on cybernetics seized the day in setting population policy (see also White 2006).

Emergent work is beginning to explore how population policies may be linked to environmental issues and projects including preservation of biodiversity (Sasser, in progress; Stein 2004), perhaps presaging East Asian innovations. A new focus of research is concerned with pronatal population policies that address dwindling populations of particular ethnic/racial composition. Deemed a “demographic emergency” in Italy, where the Italian birth rate has plummeted while that of immigrants has not (Krause and Marchesi 2007:350), the ethnocentrism of such concerns and policies can be very vivid across Europe (e.g., Shorto 2008).

Vis-à-vis East Asia, Frühstück (2003: 191) notes that there are suspicions of “a secret nationalist agenda” to boost the rapidly aging population of Japan. Lan (2008) compares foreign brides and foreign maids as “outsiders within” in Taiwan, examining how both their inclusion and reproduction are linked to race/ethnicity and nation-building. J. A. Liu (2008, 2009) links these issues with emergent forms of biosociality (discussed below).

The reproductive technologies of abortion and menstrual regulation (and how this has traveled beyond the U.S. feminist self-help movement) have also been studied (e.g., Belton 2007). Norgren (2001) detailed the history of how abortion access preceded (if not preempting) access to birth control in postwar Japan (see also Frühstück 2003). Y.-C. Wu (in progress) tells “A Modern Story of Menstrual Regulation in Taiwan”—how a famous obstetrician and his colleagues introduced a new menstrual regulation technology in 1974 as a means of avoiding struggle around abortion. Murphy (in review) follows menstrual regulation to Bangladesh, focusing on its use by US development agencies.

Sex selection in East and South Asia is almost invariably pursued to produce sons, and hence, involves complex, difficult, and contested gender issues. Kim (2000) foregrounds a unique dilemma of feminists in East Asia regarding how to support women's reproductive right to legal abortion while supporting the restriction of sex-selective ones. She and Lei (2007) use similar analytical approaches to assess

the impacts that the regulation of such practices might have on Korean women. Tedesco (1999) and Norgren (2001) both address the interests of the medical profession in shaping the regulation of abortion. Miller's (2001) comparative study of female-selective abortion includes South Korea, Taiwan, China, India, and Pakistan.

Infertility studies have actively gone beyond the West for some time (e.g., Inhorn and van Balen 2002; Inhorn and Birenbaum-Cameli 2008). Handwerker (1995, 1998, 2002) focused on conceptions of female infertility in China and the range of services offered to infertile women. She examines how the "one-child policy" affects infertility medicine and how prospective patients are screened. Ha (in progress) is studying IVF technology in Korea as its discursive domain has shifted from reproductive technology to one of bioengineering. In neither country has regulation been instituted. Issues of regulation and the transparency of IVF effectiveness rates at different clinics are becoming very lively across the globe.

Tsuge (this issue) studied women's accounts of ceasing IVF treatment in Japan. Religious concerns are intersecting with IVF practices in many sites,⁴ as are concerns about what to do with extra embryos (e.g., Roberts 2007; Thompson 2007, 2008). Whether the new phenomenon of "egg banking" as an investment in their future by single American career women (Romain 2008) will travel remains to be seen. It certainly further stratifies reproduction by providing elite women with elaborated technoscientific choices (Colen 1995).

One emergent issue here is the persistence of biological race in egg and sperm donation and purchase for assisted reproduction, particularly manifest in concerns about skin tone (Thompson 2009). Gender emerges vividly in Wu's (in progress) innovative study of how physicians have engaged artificial insemination donors and users in Taiwan since the 1950s. Focusing on the unstudied masculinities constellated by this the oldest technology of assisted reproduction, Wu found that earlier physicians were protecting the masculinities of infertile men. More recently, to legitimate and secure husbands' participation in intracytoplasmic sperm injection (which largely replaces the use of other men's sperm), physicians emphasize to husbands that "blood is important" (see also Almeling 2006, 2007; Thompson 2008). The capacity to trace paternal lineage is often particularly significant.

A distinctive form of medical tourism (Turner 2007; Ramirez de Arellano 2007) named "reproductive tourism" is the focus of research in progress by Inhorn, who defines it as "travel in the pursuit of assisted reproductive technologies, usually from one country to another, hypothetically caused by religious prohibitions, lack of expertise and supplies, safety issues, discrimination against certain categories of people, shortages, waiting lists and/or costs" (quoted in Pounds 2007:30). Inhorn examines reproductive tourism in the Arab world, and Adrian (2006) in Scandinavia. Canadian women's abortion tourism is explored by Sethna (Forthcoming; Sethna and Doull 2009), and the U.S. Mexican traffic in the 1960s by Reagan (2000).

In East Asia, reproductive tourism has grown extensively for many of the reasons noted above. For example, Paik (2007) examines how medical tourism around East

⁴ See Tedesco (1999), Maguire (2003), and the 2006 "Special Issue: Sacred Conceptions: Religion and the Global Practice of IVF" of *Culture, Medicine and Psychiatry* 30.4, 419–563.

Asia and environs (Japan, South Korea, China, Guam) is pursued to meet an array of reproductive goals from infertility treatment to surrogacy to US citizenship. She views reproductive tourism as a form of “mobilizing maternity” related to increasing reproductive stratification. Both ova-trafficking networks and surrogacy are elaborating, making new reproductive services available for those who can pay (see also Markens 2007; Dolnick 2008).

Technologies of pregnancy and birth are increasingly taken up by ST&Ms scholars, and the practices of professionals have become a new interest. For example, instead of blaming pregnant women for their high caesarian section rates, Fu (2005, 2006) uses actor–network theory to examine surgical predilections in the postwar history of Taiwanese obstetrics and gynecology, including a shift from an “anti” caesarian section (CS) to “pro” CS discourse. Wu (2007) examines the scientific publications in Taiwan that attribute the high CS rates (well over 30%) to women and their beliefs in giving birth on auspicious days. Yet, the official “maternal request” rate for the surgery was less than 2%! Wu terms this kind of interpretation “gendered orientalism” in research practice. Zhu (2006) examines links between birthing practices and modernity in China, where a CS scar can be read as both a sign of modernity (connoting participation in a high-tech biomedicalizing surgery) and as a sign of “backwardness” (as a trend toward “natural” birth emerges and is disparaged).

Japanese obstetricians’ constructions of women’s responsibility for pregnancy outcomes in terms of their behavior and health (rather than genetics) and in relation to national reproductive politics and the gendered division of labor are taken up by Ivry (2007). In sharp contrast to the conventional Western individuation of fetus and mother (e.g., Casper 1998), Ivry found women routinely described as ecosystems in which fetuses dwelled and on which they were almost totally dependent. In Korea, rural women again need to travel to cities to obtain modern perinatal and obstetric care (Paik 2007).

3.2 Complicating the Issues

Some exciting recent work takes the study of reproductive technologies beyond the parameters set by earlier scholars while also sustaining many of their concerns. Adams and Pigg’s (2005) edited volume, *Sex in Development: Science, Sexuality and Morality in Global Perspective*, is exemplary in linking ST&Ms perspectives with population policy and contraception in development programs. Taking the new sciences of population seriously, as Greenhalgh also does, they explore the ways in which “local” moralities and sexual practices are excluded from any consideration by these sciences. Their undergirding assumption is that sexuality and morality are (or should be) somehow the same everywhere—secular, rather mechanical, and using a technical vocabulary for internal as well as external organs and processes. The consequences for women of excluding “local” moralities and sexual practices can be quite grave.

In terms of broader sociocultural trends, studies of reproductive technologies are benefiting from conceptualizing their use in terms of possibilities of enhancement (Hogle 2006, 2007) or what Rose (2007) frames as optimization. That is, any and all reproductive technologies may be assessed vis-à-vis how they are seen to improve the lives of women, men, and families. A related interesting direction is linking

research on reproductive technologies to the growing literature on consumption, which is historically impressively gendered (e.g., DeGrazia 1996), linked to motherhood (e.g., Taylor et al. 2004) linked to modernity and identity (e.g., Dunn 2008), the media (Seale et al. 2006), and to transnational exchanges (Brewer and Trentmann 2006). One example is Taylor's (2000) study of prenatal sonograms and baby prams. Another is Hardacre's (1997) study of how a ritual form for addressing some women's feelings about having had an abortion—even many years ago—has been commercialized and marketed through popular culture in contemporary Japan.

Reproductive technologies can be understood as heterogeneous forms of the biomedicalization (Clarke et al. 2003, 2009) of reproductive processes (Clarke 1995). While on the one hand, seeking biomedicalization can be construed as chic and modern, on the other hand, there is also opposition that might lead to the rejection of use of many different kinds of reproductive technologies. This is a very important site of complication to be addressed by East Asian studies. More specifically, while active opposition does exist, so too does the use of traditional/premodern medicines for reproductive interventions. Traditional/premodern approaches are particularly common in infertility, menstruation, pregnancy, and sex selection. They are much less common in birth control and childbirth. Lew-Ting (2005) argues in the case of Taiwan, for example, that integration or hybridity is quite common—exemplifying a multicultural health belief system (e.g., Kleinman 1980).

Wu (forthcoming) has noted that, while the colonial Japanese government viewed modern midwifery as a sign of the progress of civilization, many Taiwanese women still valued traditional midwifery, including some traditional techniques. This parallels the agentic distinctions colonized Korean women made during the Japanese colonial era there between what was to be deemed “modern” and therefore engaged and what was to be deemed Japanese imperialism and therefore shunned (Yoo 2008). Such distinctions will likely continue to be transposed into many related colonial and postcolonial situations. There are long-standing assertions that, in many Asian cultures, familism rather than individualism is more salient in biomedical decision-making (e.g., Lee 2007). We anticipate that emerging work will take up such complications and contradictions around gender and the full array of reproductive technologies.

3.3 Localized and Comparative Work

Particularly exciting are the intensely localized projects and the beginning of comparative work. This scholarship usually facilitates comparisons about the use of particular reproductive technologies in different nation-states (e.g., Nukaga 1998; Nukaga and Cambrosio 1997; van Heteren et al. 2002), but sometimes addresses the broader “areas” of area studies (e.g., Acero 2007; Adrian 2006).

One topic that is developing rapidly and comparatively (or at least facilitating comparison) is the study of the use of embryos for stem cell research. Leem and Park (2008) examined the feminist implications of the Hwang affair, detailing women's individual rationales and rhetorics of nationalism that pervaded the discourse in South Korea. In sharp contrast, in Italy, embryos have been

nationalized, sacralized, and withdrawn “from the sphere of what can be acted upon” (Metzler 2007:426). While the public rhetoric around embryos in Britain is of transparency and careful regulation, recent work found the on-the-ground arrangements confused, noncompliant, and out of line with good consent practices (Pfeffer and Kent 2007). A key focus here is egg donation, including questions of altruism and debates about whether and how much women should be paid for such donations—often highly gendered (e.g., Almeling 2006, 2007; Leem and Park 2008; Thompson 2008).

What of human cloning? Does this/will this/should this fall within the category of reproductive technologies? This question is actually under debate in China, where its categorization has begun to shift from reproductive technology to genetic engineering. Sleeboom-Faulkner (2008) argues that the regulation of human cloning and human embryonic stem cell research both continues PRC modes of propaganda and embodies newly formulated notions of Chinese society (see also J. A. Liu 2008).

Another topic that has been the focus of localized studies but also lends itself to comparative work is sex selection and its technologies. Taking a classic ST&MS perspective, Wu (2005) focuses on development of a distinctive Taiwanese sperm separation method in the 1990s. Called “Osmagic,” it has stabilized through alliances with prestigious physicians, a patent, English-language publications, and a “kit” format. However, sperm separation is likely to soon be replaced by prenatal genetic diagnosis and DNA-weighted semen selection, and the latter may become an easily accessible noninvasive method (van Balen and Inhorn 2003). In contrast, most research on sex selection in Asia and East Asia focuses on son preference and how this has affected sex ratios (for an overview, see van Balen and Inhorn 2003). Lei (2007) has published on the debates and ethical issues surrounding regulating sex selection in Taiwan. Focusing on Korea, Oum (2003) explores what may occur when the generation with the first seriously skewed sex ratio—through the use of sex preselection—reaches the marriage market. Drawing on feminist theory, she further argues that women’s own accounts of why they pursued such technologies may defy clichéd understandings.

Genetic testing during pregnancy has been studied both locally and comparatively. Local projects have focused on the USA (Rapp 1999), Britain (Franklin and Roberts 2006), and elsewhere (see Ivry 2006 for review). In Japan, obstetricians are reluctant to discuss prenatal genetic diagnosis for several reasons, including signaling former eugenic state policies now anathema and violating the perception of fetus and mother as one (Ivry 2006). Their reluctance thrusts the practice to the “back stage,” where it is often pursued in secrecy (see also Lock 2007; Setoguchi 2007). Working comparatively and drawing together ST&MS interests in inscription and familial heritage, Nukaga (1998; Nukaga and Cambrosio 1997) looked at the use of medical pedigrees in Canadian and Japanese genetic counseling practices.

A quite new direction in terms of complicating the issues is linking gender and reproductive technologies with other technologies or gendered surgeries. Leem and Park (2008) have innovatively argued that, in Korea, there are gendered continuities across reproductive technologies and plastic surgeries—essentially that the analytic boundary

between them is drawn by scholars and not users who see both as related to proper performance of femininity. Alex Edmonds recently echoed this point vis-à-vis Brazil.⁵

Edited works that examine gender and reproduction transnationally are beginning to appear (e.g., Saetnan et al. 2000; Feldberg et al. 2003). Liamputton (2007) offers a transnational review of reproduction framed in terms of motherhood. In the future, we hope to see works more directly focused on technologies that also explicitly discuss comparative issues—especially coming from beyond the West.

4 Issues in Gender and Reproductive Technologies in East Asia

Perhaps the major “framing” questions to be raised regarding gender and reproductive technologies in East Asia, at least since the start of the twentieth century, concern their historical and contemporary relations with different forms of imperialism and colonialism on the one hand, and postcolonialisms and nationalisms on the other. As the boundaries will likely never be clear, these are matters of emphasis and not exclusion. The emerging literature on biological citizenship also seems of particular and growing import vis-à-vis reproductive technologies, gender, and the state.

4.1 Imperial and Colonial Roots and Contexts

The histories of imperialisms and colonialisms not only intersected with but have also been constitutive of the situated histories of reproductive technologies (e.g., Hodges 2008). There are several pertinent concerns. First, in recent scholarship, heretofore conventional assumptions about late nineteenth and twentieth century European colonialisms as adequately representative of forms of imperialism are being actively destabilized (e.g., Hall 1996a; Tsukahara 2002; Raj 2006; Fu 2007; Stoler et al. 2008). For example, the significance of Japanese imperialism for much of Asia and the Pacific is beginning to be elaborated (e.g., Low 1999, 2005; S. Liu 2008; *EASTS* special issue 1.2 2007). Very recent work takes up Chinese imperialism in Tibet (Stoler et al. 2008), and especially vis-à-vis gender, the US occupation of Japan (Koikari 2008).

Second, theories reliant upon one-way metropole to colony frameworks, including modernization and development theories, have been widely challenged (e.g., Stoler and Cooper 1997; Chambers and Gillespie 2000; Anderson 2006). As Fan (2007b:229) points out, “Knowledge production took place not only in European metropolises, but also in other parts of the world” by many different peoples, raising theoretical and methodological challenges for us in addressing science (and we would add medicine) in cultural borderlands. In terms of the sciences, *EASTS* offered a special issue on colonial sciences in former Japanese imperial universities (Tsukahara 2007; see also Fan 2007a).

In terms of medicine and often inspired by Arnold (1993, 1994), there has been a spate of recent work that opens up broader questions of colonialism (e.g., Manderson 1996; Farquhar and Hanson 1998; Hunt 1999; Clancy et al. 2002; Andrews and

⁵ He did so in a session on surgical futures organized by Lawrence Cohen at the 2008 meetings of the American Anthropological Association, San Francisco.

Sutphen 2003; Anderson 2006). S. Liu (2008) offers a revisionist history of the spread of modern medicine from Japan to its colonies, arguing that it was not so much (or not only) a planned colonial project as it was the result of academic rivalries *within* Japan. Others have studied medical practices in colonial Taiwan (e.g., Chin 1998). Lo (2002) found “hybrid identities” among colonial Taiwanese physicians. Looking at biomedicine in Chinese East Asia, Anderson (Forthcoming) troubles the categories of colonial *per se*.

Perhaps most important here among recent studies is Rogaski’s (2004) project on how hygiene became a crucial element in the formulation of Chinese modernity in the nineteenth and twentieth centuries. Using Williams (1976) keyword methodology, she followed the changing meanings of the Chinese concept *weisheng* (in English: “hygiene,” “sanitary,” “health,” or “public health”). For much of the nineteenth century, *weisheng* was associated with diverse regimens of diet, meditation, and self-medication from Chinese cosmology. With the arrival of imperialism, its meanings shifted to encompass such ideas as national sovereignty, laboratory knowledge, the cleanliness of bodies, and the fitness of races. Significantly, her work demonstrates a different modernity in East Asia. Using her lens on reproductive technoscience might easily broaden the possibilities of seeing how such modernity might be gendered.

Such expanding conceptualizations of imperialism and colonialism are already complicating studies of reproductive sciences and technologies by demanding research on nonwestern colonial situations such as Korea or Taiwan under the Japanese c1900–1940. Work such as Yoo’s (2008) on *The Politics of Gender in Colonial Korea* greatly facilitates research directly on gender and reproductive technologies. Yoo argues that Korean women were accepting of much that was deemed “modern” but not of much that was deemed “Japanese” and, hence, colonial. What relation did this have to reproductive technologies? Hodges (2008) counters conventional colonial framings by elucidating how South India’s engagement with birth control before WWI not only remade South India but also refashioned the international birth control movement. Anderson’s (2007) work on settler colonies provokes different questions about relations between reproductive technologies and indigenous populations and their health.

4.2 Postcolonial and Nationalist Embeddedness

Issues of postcolonial and nationalist embeddedness pose yet other problems in considering reproductive technologies in East Asia. The term postcolonial is itself challenging. Hall (1996b) asked many years ago “When was the postcolonial?,” asserting that colonialisms may continue long past dates of independence. In terms of the extant literature, there is much less on the postcolonial/neocolonial era (for reviews, see Anderson 2002, 2004; Anderson and Adams 2007; Packard 2003). Today, we often see the terms neocolonial and neoliberal expansions used to refer to the varied forms of maintenance of colonial regimes and practices.

Explicit work on the postcolonial/neocolonial and things medical is beginning to emerge, demonstrating diverse histories and relations of nationalisms and (bio) medicines (e.g., Leung and Furth Forthcoming). For example, looking at Chinese East Asia, Anderson (Forthcoming) argues that, in some sites, medicine was better conceptualized as semicolonial, troubling the boundary with postcolonial yet further.

Looking at Taiwan, Chin (1998) directly links the practices of colonial medical police with postcolonial medical surveillance systems. Whether and how these medical issues link to access to or practices around reproductive technologies are interesting questions we hope will be pursued.

It can be argued that issues of nationalism somehow inform the conceptualization and consideration of almost if not all reproductive technologies and policies relating to them in East Asia today. That is, the complex and thorny histories of colonialism and national histories in the region play out especially vividly around issues of reproduction in general, perhaps especially in terms of population size, ethnic/racial composition (discussed above), and the symbolism of reproduction as reproducing the nation itself. Moreover, because reproductive technologies actively intervene in reproduction, so important to the nation-state, issues of nationalism become central to their very framing. Even a cursory review of the bibliography of works in English on reproductive technologies in East Asia in this volume reveals the pressing questions of salience of cultural and geopolitical histories and boundaries.

Issues of postcolonialism and nationalism in relation to reproductive technologies after WWII also link to international health and development programs, and more recently to global health (e.g., Carpenter and Casper [forthcoming](#)). For example, Dimoia (this volume) and Kuo (2002), although not centered on gender politics, provide case studies for South Korea and Taiwan respectively of how contraception and population control linked to the Cold War, nation-building, and development. The activities of major Western foundations in East Asia must be considered within this framework (e.g., Hewa and Hove 1997; Sharpless 1997).

Last, *vis-à-vis* nationalism and reproductive technologies, we need to “follow the money”—trace the flows of capital toward reproductive technoscience (e.g., Spar 2006; Rajan 2006). Thompson (2005:248–9) argues that in terms of capital today, there is a shift of importance from production to reproduction: “[T]he biomedical mode of reproduction...has its own characteristics systems of exchange and value, notions of the lifecourse, epistemic norms, hegemonic political forms, security, and hierarchies and definitions of commodities and personhood.” Generating biocapital by these means is a form of extraction that involves isolating and mobilizing the “primary reproductive agency” of specific body parts, particularly cells—usually those of women.

One East Asian biotechnological exemplar here is the major Korean investment in stem cell research that culminated in the Hwang controversy (see, e.g., Hong 2008; Kim 2008). As Ong (2008) points out, national patterns of biotech investment vary tremendously in East Asia. Another example is the reproductive tourism business in East Asia (e.g., Paik 2007). Sites for such tourism are multiplying and the networks among them densify rapidly. An interesting project would be tracing how these projects stimulate each other—become coconstitutive.

4.3 Feminist Theories of Gender and Transnationalism

Of particular pertinence to studying gender and reproductive technologies in East Asia is feminist attention to and theorization of transnational issues sustained over at least the past two decades. Much of this literature has focused on the inadequacies of most globalization theory *vis-à-vis* gender, especially its failure to address the

differences and distinctiveness of the positionalities of women and men in various geopolitical sites (e.g., Mohanty et al. 1991; Grewal and Kaplan 1994; Alexander and Mohanty 1997; Kaplan et al. 1999; Kim-Puri 2005). In short, gender may “matter” hugely in the localization of practices, but in addressing such concerns, analysts need to be wary of reinscribing binaries and essentialist understandings. Reproductive technologies travel widely, sliding along biomedical and development project infrastructures into new settings. How they are taken up and “matter” in these settings differs extensively based on gender, sexuality, nation and state (e.g., Pigg 2005; King 2000). And the scholarly pursuit of these issues largely “under Western eyes” (Mohanty 2003) remains an ongoing and problematic source of its partiality.

As already demonstrated by much of the literature on reproductive technologies in East Asia, the salience of nation states and nationalisms for gendered issues is not dissipating, but perhaps even increasing (Kim-Puri 2005). Yet, at the same time, there are also strong transnationalizing tendencies including but not limited to “reproductive tourism” discussed above. There are also stratifications of reproduction *within* nation states (e.g., Ginsberg and Rapp 1995; Collins 1999), as well as secrecy and unethical practices (e.g., Gupta 2000). Hopefully the next generation of studies of reproductive technologies in East Asia will pursue such complexities.

4.4 Biological Citizenship and New Biosocialities

Among the questions it may be useful to ask concerns relations between reproductive technologies and what has been called “biological citizenship” and new biosocialities. Engaging “life itself” through biomedicalization at the level of *population* primarily involves “biological citizenship” or “biocitizenship” as nation-state related (e.g., Ginsberg and Rapp 1995; Nguyen 2005; Ong and Collier 2005; Petryna 2002; Rose and Novas 2004).⁶ Biological citizenship consists loosely in the rights of citizens to protection and promotion of their health and well-being by the nation-state. For example, affirming claims of Chernobyl victims as “biological citizens,” Petryna (2002) argued that citizens have rights to health services and social support for the survival and well-being of their biological bodies.

Key questions for us are whether and how forms of biological citizenship are emergent in different national policies and practices related to reproductive technologies. Such questions likely need to be asked regarding one nation state at a time and one reproductive technology at a time. That is, a particular nation may or may not offer state-supported use of a particular reproductive technology. State-supported health services typically cover contraception, sterilization, prenatal care and birthing but not assisted reproductive technologies for infertility. Debate about the appropriateness of state support is most visible regarding hotly debated practices such as surrogacy, but should also be studied vis-à-vis less visible reproductive

⁶ Rose (2007:131) traces this to Marshall’s (1950) classic essay positing an historical evolution of national citizenship in Europe, North America and Australia where civil rights granted in the eighteenth century led to political rights in the nineteenth, and social citizenship in the twentieth. Forms of biological citizenship emerged in the late twentieth century as rights of citizens to protection and promotion of their health and well-being, however rhetorical rather than in concrete practice. The development of biological citizenship in locations with colonial histories is, of course, worthy of study on its own terms as well as in relation to reproductive technologies.

technoscience, such as birth control and abortion. Moon's (2005) work on gendered citizenship in South Korea, for example, included explicit concern with and policies around women and reproduction formulated by the state itself. In terms of gender and reproductive technologies, it will be interesting to see whether and how biological citizenship is taken up.

Innovatively extending the concept of biosociality (Rabinow 1992, 2008), Jennifer Liu (2008) recently asserted that neoliberal modes of individuation intertwine with affective, and specifically ethnicity-based, imaginations of "communities of fate"—"the affective mapping of collective interests engendered by biotech innovations that resuscitate folkloric notions of family, ethnicity and the nation" (Ong and Chen *Forthcoming*). Through case studies of stem cell related technologies and banks in the Taiwanese biotech industry, she suggests that notions of *peoplehood* (*not* personhood) are configured in newly biosocialized modes. Liu found that as stem cells are made to be "Taiwanese," as umbilical cord blood is privately banked in the name of family and responsibility, and as bone marrow banks appeal to notions of ethnic similarity evidenced by presumed histocompatibility, both individualizing and collectivizing movements are at play as subjectivities and collectivities configure themselves in new relations understood as "biological." Liu is going far beyond conventional assertions of Asian familism here (e.g., Lee 2007). And recent work has also demonstrated such "biological familism" beyond the East (e.g., Rapp 1999; Acero 2007).

In sum, we anticipate that future scholarship will articulate layered consequences of imperialisms, colonialisms and postcolonialisms, and begin to tease these apart. There also exist hybridities of practice of traditional/premodern and high-tech interventions in reproductive processes that the analytic and conceptual tools of ST&MS should be able to grapple with ably. Biological citizenship and emergent forms of biosociality in both their localizing and transnationalizing dimensions will also be linked to reproductive technologies in newly elaborated ways.

5 Introduction to the Articles

The topics of the papers in this special issue range from reproductive science in China to birth control, family planning and population policy in colonial South Korea and in the new republic's early years, and lived experiences of infertility and its treatment in contemporary Japan.

The first paper, by Howard Hsueh-Hao Chiang, centers on aspects of the uptake of Western reproductive science in China in the first half of the twentieth century. Chiang offers a window into how Confucian understandings began to be supplanted by those with roots in Western biological sciences, demonstrating China's "flexible response to the West" (Purdue 2007:143; see also Rogaski 2004). Analyzing both the scientific and more popular writings of embryologist Zhu Xi (1899–1962), Chiang shows how the discourse of *ci* (biological femaleness) and *xiong* (biological maleness) was linked to the capacity to *see* sexual differences.

Not surprisingly, given the historical importance of sex and gender as binaries in Chinese culture (e.g., Leung 2006), intersexuality and hermaphroditism which complicate as well as reinforce such binaries were important to Chinese life

scientists' discourse at the time. The focus on human hermaphroditism also allowed Zhu Xi to parallel the discourse of *ci* and *xiong* with *nü* (woman) and *nan* (man), underscoring the centrality of the human/nonhuman divide. Chiang's paper nicely frames what he calls "the conceptual contours of sex" in the Chinese life sciences and beyond, as many of these new ideas made their way promptly into nonscholarly venues as well, as did new hormonal products.⁷

The next two papers take up dynamics of birth control, family planning and population policy in Korea. Sonja Kim examines how birth control issues emerged in colonial Korea as they were being hotly debated and more or less regulated in imperial Japan. In terms of the circulation of information about birth control and advertisement of birth control products, the situation seems to have been ambiguous in both Japan and Korea. While providing *scientific* information about birth control processes and products was legitimate, direct advertising was not. However, products could be and certainly were sold, and loopholes to allow the equivalent of advertisements were found—what we might today call "infomercials"!

Kim argues that Korean reformers' efforts towards establishing a "modern health regime" initiated during the late nineteenth century were usurped by Japanese authorities after the Protectorate was instituted in 1905. Initially the colonizing powers sought what Kim calls "passive means" of increasing the population in Korea. These included strict prohibitions on abortion and infanticide, and relocation of "surplus" populations to another colony, Manchuria, to reduce poverty. After World War I, links between overpopulation, poverty and failures of industrialization began to be articulated. Korean reformers and Korean feminists alike found birth control advocacy and use appropriate, as did many women. In contrast, various Japanese anti-birth control articles appeared. By the early 1930s, eugenic concerns dominated Japanese rhetoric, dimming by the late 1930s as colonial needs for increased population escalated. In post WWII Korea, Kim asserts that interest in and circulation of some means of birth control was lively while in other ways women were often "stuck" in the interstices of nationalism and patriarchy.

Presaging our second paper on Korea, Eun-Shil Kim (1993:251) wrote, "For the last three decades, birth control has not been discursively differentiated in a feminist sense from population control (family planning) in Korea...[S]tate politics of bio-power...has placed women's sexual and reproductive conduct within the parameters of national policy...aimed at a project of modernization and economic development." John DiMoia's paper focuses on family planning and its explicit links to nation-building from 1961–1968. He argues that while considerable attention has been paid in scholarship on postwar Korea to the role of the military in modernization, not enough has been devoted to corresponding mobilizations of biomedicine of which reproductive technologies are a significant manifestation.

Between 1961 and 1968, a nation-wide family planning program was put in place and DiMoia captures its thrust in his subtitle, taken from the 1965 poster that is on the cover of this special issue: "Let's Have the Proper Number of Children and Raise Them Well!" The ideal number of children fell from three

⁷ For example, while traditional Chinese medicine had addressed spermatorrhea (involuntary emission of semen) for eighteen hundred years, new remedies such as the French hormonal product *Spermin*, available after 1935, were popular (Shapiro 1998:553; see also Hsu 1992).

c1970 to one c1985. This program was exemplary among the transnational population control efforts of this era. If Puerto Rico provided “a cage of ovulating females” for the oral contraceptive pill clinical trials in the 1950s (Marks 1998), South Korea functioned similarly in the 1960s for the IUD (e.g., Dugdale 2000; Takashita 2004). DiMoia’s paper enriches this history.

Because “Seoul is full,” the Republic of Korea linked with the Planned Parenthood Federation of Korea to exert control especially over the bodies of rural women. Both were linked to the University of Michigan’s Population Study Center, and were soon joined by American and Swedish development agencies to cosponsor efforts to distribute “modern” IUDs to rural areas.⁸ Sadly these areas were sorely lacking in medical facilities for back-up services to attend to complications and IUD removals, and the costs to women were high (see also Takeshita 2004). The programs promoted “mothers’ clubs” as a means of recruitment of contraceptive “acceptors,” and sought “modern” women as new community leaders to spearhead state family planning efforts. Vasectomies were also made available for “modern” men. DiMoia concludes that birth control technologies as biomedical innovations were embraced enthusiastically by an array of local actors in republican South Korea as a new means of exerting control over their own people, and have left behind an ambiguous legacy of state control that is only beginning to be re-examined.

Our last paper in this special issue focuses on infertility in contemporary Japan. Here Azumi Tsuge explores how women often feel torn—on the horns of a dilemma—about whether to continue or discontinue pursuit of a child through infertility treatment. Her work is situated at the now cutting-edge “affective turn”—the interface of personal biography, subjectivity and technoscience (e.g., Biehl 2007; Nguyen and Liamputton 2007; Blackman et al. 2008; Ong and Chen *Forthcoming*). Tsuge uses feminist narrative analysis to elucidate stories of women well into prolonged treatment trajectories, and by then well aware that success was unlikely. The women, who she studied over many years, clearly situated their decisions about continuing to use technoscience deeply within highly gendered familial and cultural expectations of motherhood as properly feminine.

For these women, ceasing pursuit of a child through the use of reproductive technologies meant reconstructing their identities and subjectivities, and sometimes redirecting their careers as well, in ways that echo studies of people coming to terms with severe illness and disability (e.g., Charmaz 1999; see also Becker 2000). One woman, herself a scientist, went forward with treatment multiple times and discussed having done this altruistically—on behalf of other patients as well as herself. This echoes recent work on scientists taking personal risks for their science (Herzig 2005).⁹ Tsuge concludes with an insightful discussion of the subtle “vocabularies of motive” the women used about what it meant to stop treatment (Mills 1940). Interpretations included signifiers not only of personal inadequacies but also of

⁸ Halfon (1997, 2007) brings a feminist ST&MS perspective to questions of “over”population in relation to gender, race and health. On population science and Asia, see also Greenhalgh (1995, 1996) and Sharpless (1997). See also Connelly (2008).

⁹ Historically, in reproductive technoscience, wives or other female relatives often “sacrificed for science” as “pioneers users” of a new technology or donating cervical cells toward Pap smear development.

“getting over,” acceptance, and “moving on” in the face of a failure of technoscientific modernity.

6 Conclusions

In sum, a second wave of research on gender and reproductive technologies is gaining momentum, marked by studies of such technologies in their transnational travels of which works on East Asia now constitute a growing contribution. These works emphasize the diversity of situations in East Asia wherein reproductive technologies are taken up and often counter traditional gender stereotypes of suffering and patriarchy. They reveal the heterogeneous forms of agency enacted as people actively pursue their reproductive goals through the use of technoscience along with traditional/premodern approaches engendering hybrid modernities. The often complicated new biosocialities—familial, community, and national—in which they are embedded are revealed. At the same time, these projects increasingly attend to and reveal the imbrications of reproduction *per se* in the historically dense and nuanced histories of imperialism and colonialisms, postcolonialisms and especially nationalisms.

We anticipate that these areas of focus, along with new and emergent framings of biological citizenship, biosocialities and the turn to affect, subjectivity and technoscience will become of increasing concern in the next decade. More broadly, scholars may explore whether reproductive technologies are constitutive of the biomedicalization not only of individuals but also of societies—transformations of societies induced by biomedicine (Burri and Dumit 2007:4). Fu (2007) has asked, “How far can EASTS go?” Through examining the details of encounters, the patterns of collision, and the resulting negotiations as reproductive technoscience is taken up in new sites, we may trace its lasting—and even structuring—effects on East Asian societies. This would be going pretty far indeed.

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