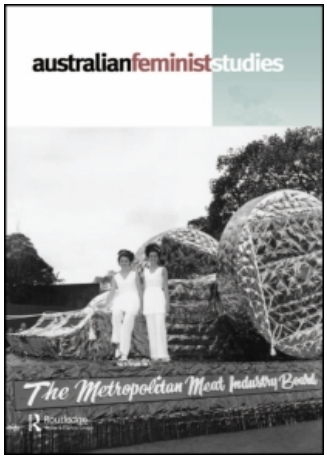

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THE BIOPOLITICS OF REPRODUCTION
Post-Fordist Biotechnology and Women's Clinical Labour

Catherine Waldby and **Melinda Cooper**

Introduction

Throughout the OECD, birth rates are in decline.[1] Women in the majority of the developing nations are delaying childbirth and having fewer children, a trend that has precipitated considerable anxiety among states concerned with the dwindling proportion of their working populations and the complex economic and political consequences of an ageing citizenry. Consequences are said to include depressed economic growth through increased demand on welfare and healthcare provision, and a reduction in taxation revenues as a smaller proportion of the working population support a larger proportion of retirees and those with chronic illness (Martins et al. 2005). As Neilson notes, this demographic shift has serious political consequences:

> These changes in age profile threaten the economic viability of the world's wealthiest and most powerful nation-states, tearing at the fabric of their once liberal notions of citizenship, constitutionalism, and social contracturalism . . . population aging places a glacier-like pressure on the nation-state, slowly but surely eroding its centralized apparatuses for managing the production and reproduction of life. (Neilson 2003, 163)

Needless to say, the majority of OECD states have some policies in place to attempt to reverse or at least slow the decline in the birth rate: improved childcare, better maternity leave, baby bonuses and the simple exhortation of women to have more children.[2] In most cases, they are proving ineffective, as women and couples prioritise economic security and career development over the production of large families. The reasons for this shift in priorities are complex, intertwined, as Neilson notes above, with transformations in the biopolitical ordering of life.[3]

These transformations could be summarised as the neoliberalisation of life, both in the sense of the everyday life of citizens, and the biological life of populations. The decline in reproduction demonstrates these two forms very succinctly. In the realm of everyday life, we see the effects of a shift in state–market–citizen relations. The post-war form of state-centred biopolitics (Ewald 1986)—national health systems, social security, Keynesian full employment policy and economic regulation—gives way to what is sometimes termed the Competition State (Cerny 1997), concerned with the attraction of finance capital, the deregulation and privatisation of production and the devaluation of its workforce to achieve global competitiveness. The Fordist model of family life (male breadwinner, family wage, full-time mothering) has necessarily given way in the face of deregulated wages and the need for the two-wage family, the financialisation of everyday life (Martin 2002), the decline in social security, and the increasing cost of health care and housing as they are

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opened to global investment markets. These changes dramatically increase the economic and emotional costs of reproduction, and lead women, especially middle-class women, to delay childbearing or avoid it altogether. The wide dissemination of feminist-influenced civil society also means that state exhortations to have more children are unlikely to find much purchase.[4] It is evident, then, that one of the unintended consequences of neoliberalism has been the state's loss of traction over female reproductive biology and its disengagement from nation-building projects.

At the same time, women's reproductive biology has become the focus of extensive biomedical research interest and global commercial innovation. This constitutes another form of neoliberalised life, this time situated at the level of biological processes, and part of a much larger marketisation of biological vitality (Waldby and Mitchell 2006; Cooper 2008). Effectively, we would argue, the processes of reproduction have been deregulated, privatised and made available for investment and speculative development. This investment takes two major forms. First, since the birth of the first IVF baby in 1978, medically assisted reproduction has become a huge global business.[5] Middle-class couples increasingly turn to assisted reproductive technology (ART) (IVF, donor gametes, PGD) to facilitate conception late in a woman's reproductive life, once they have achieved economic security. Increasingly, access to ART and donor gametes is through reproductive tourism, the purchase of fertility from poor women in the developing world. We will discuss this development in detail in the body of this paper.

Second, and more recently, many of the new technologies associated with regenerative medicine—embryonic stem cell research, saviour siblings, somatic cell nuclear transfer (SCNT), cord blood banking—rely on female reproductive biology as a generative site. These technologies utilise the autopoietic[6] capacities of embryogenesis and the fetal–maternal blood system to generate therapeutic stem cell tissue *that is itself autopoietic*. That is, unlike whole organ transplant, which substitutes a working organ for a faulty one, regenerative medicine aims to transplant tissue that is self-organising and self-generating once inside the body, and able to repair and regenerate diseased sites. These technologies effectively convert the generative power of female reproductive biology into regenerative therapy. Hence, they position reproductive biology as one of the most important machines for the bioeconomy, especially as a promissory machine, working through appeals to biological potential and the future regeneration of the body (Waldby 2002; Franklin 2005).

Female reproductive biology is thus undergoing a complex rearticulation. New reproductive technologies like IVF have disaggregated it from its *in vivo* location, and stem cell technologies have diverted it into biomedical domains unconcerned with the production of children. Reproductive potential is now bifurcated. *In vitro* embryos and *in vitro* oöcytes can be transplanted to produce another human life, a child; and they can be biotechnically reconfigured in a laboratory, diverting their pluripotency into the production of embryonic stem cell lines. In both cases, however, reproductive industries require proprietary control of high volumes of difficult-to-donate reproductive tissue, either to supplement the failed fertility of the IVF patient or to perform the tricky task of creating stem cell lines. Hence, the compliance, negotiability and general agency of female populations is a central issue in the development of the reproductive bioeconomy.

In what follows, we will investigate the global biopolitics of contemporary reproduction via an examination of human egg or oöcyte markets in Eastern Europe, North America and elsewhere. Oöcytes (unfertilised eggs), as we noted above, are points

of bifurcation in reproductive potential. They are in great demand within private fertility medicine as more and more women that are infertile require donated oöcytes as part of their treatment.[7] This demand is set to increase sharply, because oöcytes are also used in the SCNT process, otherwise known as therapeutic cloning.[8] The SCNT research effort is gathering pace in a number of countries,[9] and the current evidence suggests that scientists will need very large numbers of oöcytes for experimental research.[10] This demand cannot be met through the national gifting systems that prevail in most developed nations.[11] The reproductive industries are increasingly turning to unregulated global markets for oöcytes provided cheaply by women in the former Soviet Union, China, South Africa and elsewhere. Before we turn to an account of oöcyte markets, however, we want to frame the discussion in terms of labour, and raise the rather neglected issue of how best to understand the work performed by globally distributed tissue providers in the bioeconomy.

Clinical Labour

In what follows, we will open out the concept of reproductive labour, developed by Christine Delphy (1984) and other feminist theorists (Pateman 1988; Mies 1998). In this literature, feminists have primarily analysed reproductive labour within the context of the First World welfare or social state.[12] Our analysis needs to take into account a quite different biopolitical order. As we have already discussed to some extent, post-Fordism changes the face of social reproduction. We also need to account for the global divisions of reproductive labour, and the ways in which gendered divisions of labour are highly racialised. Certainly, Marxist feminist accounts have generally failed to come to grips with the new *microbiopolitics* of reproduction, its shift into the domain of laboratory life, *in vitro* manipulation and intellectual property. Some feminist analysts of the bioeconomy (Dickenson 2007; Thompson 2005), however, have adapted the idea of reproductive labour to discuss what Thompson describes as 'the biotech mode of production' (2005, 250–53), and we take their work as our point of departure.

We would argue that women's participation in the sale of eggs involves a very literal form of bodily, reproductive labour—a kind of labour that has been traditionally available to women but which has only recently been medicalised, technologised and standardised to an extent where it can be organised on a global scale. At the same time, we situate the development of human egg markets within the context of larger dynamics in the global biomedical industry. In this sense, egg vending can be understood not only as a relatively new form of female reproductive labour but also as one feminised variation on a whole gamut of new forms of *biomedical or clinical labour* (e.g. participation in clinical trials or the selling of organs and other bodily tissues as a means of livelihood). This labour is not recognised generally as such, because it does not consist primarily in the performance of codified tasks but rather in subjects giving clinics access to the productivity of their *in vivo* biology, the biological labour of living tissues and reproductive processes. It does, however, involve second-order tasks; compliance with often-complex medical regimes of dosing, testing, appointments and self-monitoring. A non-compliant population renders reproductive and clinical procedures useless (Nahman 2005; Nguyen 2005). While populations in the developed economies perform some kinds of clinical labour—particularly tissue donation to biobanks and clinical trial participation—more onerous and risky clinical labour is increasingly outsourced to poor populations in the developing

world. Of relevance here is the anthropological literature on global organ markets (Scheper-Hughes 2001; Cohen 2001), and an emerging literature on the globalisation and outsourcing of clinical trials (Petryna 2006; Rajan 2006). This phenomenon, in turn, demands a perspective on the role of biomedical and health technologies in the shifting geographies of global labour flow. So far, most social science perspectives on the new biomedical technologies have focused on the question of cognitive or knowledge labour, while neglecting the question of tissue procurement. Arguably, however, the biotech enterprise will not be able to establish itself as a fully-fledged, integrated market until it has also mobilised a sizeable reserve of tissue suppliers and experimental subjects. What will be the role of reproductive and/or biomedical and clinical labour in the emerging bioeconomies of the twenty-first century? To what extent will these services be subject to a sexual division of labour? An important contribution to this question can be found in the feminist literature on female or feminised labour in globalisation (Sassen 2003; Ehrenreich and Hothschild 2003), which we discuss below.

Finally, the reconfiguring of global, reproductive labour raises important questions about the critical value of some of the defining distinctions of political economy—the notion of property and its relation to property in the body, for example; or the difference between productive and reproductive labour—all questions that have been raised by feminist theorists in the past. For this reason, we will suggest that the specific relations of reproductive labour that have come to the fore in the neoliberal era are both new and not so new. In often surprising ways, the kinds of power struggles that today implicate the (re)productive body, along with the class, race and gender differences that establish divisions of labour within the reproductive realm, bear striking similarities to the history of reproductive, sexual and slave labour in early capitalism (Beckles 1989; Kempadoo 1999). We discuss this work later in the paper.

Taking the two analyses together, we might want to hypothesise that the contemporary permutations of reproductive, biomedical and clinical labour lie at the heart of the neoliberal restructuring of capital. What neoliberalism seeks to make available, in other words, is not merely a permanent surplus of labour power but also a surplus of reproductivity, a reserve of low-cost suppliers of reproductive services and tissues who perform unacknowledged reproductive labour within the lowest echelon of the bioeconomy. We wish to develop the idea of reproductive or clinical labour in order to make their contribution more visible and valued, and to test its implications for better conceptualising justice and equity for the tissue providers within the bioeconomy.

Oöcyte Markets

As we observed above, oöcytes are essential tissues, both for reproductive medicine and regenerative medicine. They are in short supply globally, however, because donation is an onerous and risky process, even under the best clinical conditions. Unlike semen, they are not a self-renewing, copious and accessible tissue. Women have a fixed number at birth, and the normal biology of reproduction involves the release of a single oöcyte per month. *In vitro* fertilisation technology is necessary for oöcyte donation, both to produce multiple oöcytes per procedure and to detach them from the female body. In a process termed ovarian stimulation, drugs are administered to shut down the woman's normal reproductive cycle, and then other drugs administered to stimulate the development of multiple follicles. Harvesting requires invasive surgery. The procedure involves:

> Daily sub-cutaneous hormone injections over a period of 7 to 10 days. Mature oöcytes are retrieved under ultrasound guidance by the insertion of a needle through the vagina in a brief surgical procedure that requires anesthesia . . . The ethics committee of the American Society for Reproductive Medicine cites an estimate that egg donors spend '56 hours in the medical setting, undergoing interviews, counseling, and medical procedures related to the process'. The injections are uncomfortable and have side effects. The retrieval of oöcytes carries risks, such as those of anesthesia and bleeding. (Steinbrook 2006, 324)

It also carries the risk of ovarian hyper-stimulation syndrome, a usually unpredictable response to ovulation induction (Steinbrook 2006) that involves pain, abdominal inflammation, possible renal failure and infertility, venous thrombo-embolism and cardiac instability. It can be fatal. Up to 5 per cent of women in treatment develop hyper-stimulation syndrome (Magnus and Cho 2005; Delavigne and Rozenberg 2002). Dickenson (2006) argues that oöcyte donation is more like live kidney donation than sperm donation, in terms of the singularity of the tissue, the risks involved in the process and the possibility of long-term consequences.

In most of the advanced industrial democracies (the United Kingdom, Australia, New Zealand, Canada, Singapore, most of Western Europe) oöcyte procurement is regulated along the lines of solid organ donation, through compensating gifting. This conforms to the widely held bioethical principle that donors and recipients are best protected (morally and clinically) by gift systems.[13] Gifting, however, has proved unable to meet the ever-escalating, worldwide demand for oöcytes. In response to this escalating demand, private, transnational fertility clinics have set up in states that permit gamete trading, notably the United States, Romania, Spain, Crete, and others. Much of this trading takes place across borders, where infertile couples purchase oöcytes from women in a different location. There are two primary business models for transnational oöcyte trading, as described in the following subsections.

IVF Tourism

Reliance on gifting and regulatory restrictions in Western European states has created a market for reproductive oöcytes among wealthy Europeans. To supply this demand, privately run fertility clinics have set up in countries with more permissive regulations on the fringes of Western Europe. Clinics in southern Spain and Crete offer 'IVF holidays' to attract wealthy North European IVF tourists who have not been able to obtain satisfactory treatment at home. British IVF tourists cite the shortage of oöcytes in the UK IVF system as a major reason for their trip, particularly since donor identity is no longer anonymous (France 2006). German and Italian tourists are also common, because oöcyte transfer is illegal in these countries. Unlike most of the rest of Western Europe, fertility clinics in Spain are largely unregulated. Clinics recruit through beauty parlours, supermarkets, colleges and by word of mouth, and pay oöcyte suppliers about £1,000 per procedure, with a premium paid to fair 'northern looking' donors (France 2006). A recent investigation by the UK *Observer* newspaper found that fertility clinics in the Ukraine and other parts of the former Soviet Union recruit young East European women and send them to clinics in Southern locations—Cyprus and Belize, for example—to provide oöcytes for North European couples, who pay between £8,000 and £12,000 per treatment. The women

themselves reported being paid between £300 and £600 per procedure, with a higher fee if they produce more oöcytes per procedure. They also referred to friends who had donated multiple times. One informant, a nurse working in the industry, 'told *The Observer* that some women viewed egg donation as their main source of income, going through the process of being injected with hormones at least five times a year' (Barnett and Smith 2006). Some also combined oöcyte vending with a stint of work in the local sex industry.

The Romanian Export Market

The GlobalART clinic in Bucharest presents a different business model of global mobility and oöcyte brokerage. The clinic is part of an international chain, linked to GlobalARTusa, a US-based oöcyte broker and an Israeli fertility clinic. The clinic was set up precisely to prevent oöcyte purchasers from having to travel overseas to find oöcyte vendors. Instead, it recruits young Romanian women to provide oöcytes and fertilises them with sperm from the male partner *in situ*, before transporting them back to the United States or Israel. At the time of writing, this was the only clinic in the world known to operate along these lines (Nahman 2005). Young women are recruited by word of mouth and are paid about US$200 per procedure. An ethnographic study of the clinic, involving two weeks of observation and interviews with 20 of the oöcyte vendors, as well as staff, found that the fee amounted to between two and four times the women's monthly salary. Some of the women interviewed had sold oöcytes several times, or intended to sell again. All the women interviewed stated that they sold their oöcytes because of financial necessity. Most had salaries that barely covered subsistence (rent, food) and selling oöcytes was their only means of paying for clothing, study, basic home maintenance or their children's needs. Many stated anxieties about the risks involved in the procedure but felt that they had little option, given debts and other financial pressures. There is evidence that healthcare standards at the clinic are variable or below acceptable benchmarks. The interviewees stated that they received higher fees for greater numbers of oöcytes per cycle, or were allowed back frequently to sell oöcytes, a practice also reported by the women interviewed by *The Observer*. Such a practice is clinically ill advised, as it encourages higher levels of ovarian stimulation and the women run a greater risk of hyper-stimulation syndrome.[14]

Here we can see a stratum of the young, female population in Eastern and Southern Europe who supplement low incomes with reproductive labour for fertility clinics and older, North European couples. We also see the kind of mobility involved in the global oöcyte market (and its overlaps with sex trafficking). It seems that East European women in particular are the most desirable source of oöcytes in the European reproductive market. They have fair skin and colouring, and so their offspring are more likely to have an ethnically similar appearance to that of the oöcyte purchasers.

As Pollock notes, 'in anonymous egg donation, phenotype is privileged above all else. Physical similarity between donor and recipient makes the donation invisible' (2003, 253). Furthermore, they are an economically dispossessed population, struggling to find a survival niche in the newly deregulated, former Soviet economies.

The development of a research oöcyte market would expand the possible vendor population to women with other ethnic backgrounds, as colouring and class are irrelevant for tissue used in stem cell research. Outside Europe, China and India have burgeoning stem cell industries and extensive clinical recruitment sites, owing to the widespread use

of assisted reproductive technology to favour the birth of sons (Junhong 2001; Khanna 1997). In the United States, oöcytes are classified, along with semen, as renewable tissue. Hence, they can be legally traded, and the United States has a vigorous, highly stratified and completely unregulated internal oöcyte market. Again, reproductive oöcytes are purchased from fair-skinned, college-educated women in a market that commodifies WASP characteristics (Pollock 2003). Given the absence of regulatory barriers, there is considerable scope to extend research oöcyte markets to poor, uneducated, and dark-skinned women, women normally excluded from the reproductive market except in a capacity as surrogate mother.[15] The juxtaposition of poor, ghettoised populations with high-technology corridors (e.g. around Bethesda, Boston, Raleigh-Durham and Southern California), makes these kinds of markets even more feasible. Here we can see an internal version of the extra-territorial oöcyte trade already described, with poor, racially marked female populations within the nation-state acting as potential vendors for national biotechnology industries.[16]

Reproductive Labour—Global Trends

How can we situate the work of oöcyte production within a wider analysis of post-Fordist political economy? By selling fertility to affluent professional women, oöcyte vendors take their place alongside other mobile providers of feminised labour. As affluent women have moved in greater numbers into the labour market, the kinds of female, domestic work which the welfare state subsidised has been opened up to an increasingly transnational market in female reproductive labour (affective, sexual and domestic), one that is defined along complex lines of racial, ethnic and class difference. This phenomenon has been analysed in detail by feminist political economists such as Saskia Sassen (2003) and Isabella Bakker (2003), who insist that more attention needs to be paid to the new 'counter-geographies of survival' developed by women in counterpoint to those of economic globalisation.

International debt, these theorists argue, has had a disproportionate effect on the realms of social reproduction and hence on the lives of women. These effects manifest in a number of different ways at a global level. The structural adjustment programs imposed by the International Monetary Fund (IMF) and World Bank in the 1980s and 1990s as a means of paying off international debt, cut back public funding for health and welfare, and reduce the availability of formal unskilled work. Women are forced to invent new productive niches in the so-called 'informal' economy (Davis 2006). Within the financial centres of the global economy, the proliferation of low-waged service work, as well as the 'outsourcing' of previously formal work to informal 'home workers', has fallen disproportionately on the shoulders of migrant or minority women. This process of internal informalisation has been accompanied by a rise in the numbers of women migrating from poor to wealthy nations (legally or illegally) to fill the roles of nannies, maids and sex workers. Moreover, within developing economies themselves, one of the immediate effects of neoliberal globalisation has been the intensification of traditionally feminised forms of labour such as sex work, both as profession and occasional work. As traditional commodity exports lose their foreign exchange earning potential, tourism, and along with it the sex industry, has become a last recourse development strategy for many countries struggling to pay off their debt burdens (Sassen 2003, 269–70).

In addition to these more or less familiar forms of gendered labour, we propose that oöcyte vending is a qualitatively new form of reproductive work, one form of what we might call clinical or biomedical labour, now playing an increasingly prominent role in the dynamics of neoliberal globalism. Theorists such as Scheper-Hughes (2001) and Cohen (2001) have documented the international trade in organs in detail. More recently, it has become clear that the market in clinical trials for pharmaceutical and biomedical products is also undergoing an extensive restructuring along global lines (Petryna 2006; Rajan 2006). Over the last few years, the US- and European-based pharmaceutical industry has made moves to outsource clinical trials to specialised research service providers, which in turn have relocated the actual conduct of clinical trials to countries and regions such as India, China and Eastern Europe. The 1990s saw a phenomenal rise in the number of US-based contract research organisations. These are subcontractors that organise offshore clinical trials for pharmaceutical, biotech and medical device industries and are paid to navigate the complex arena of national regulations in order to secure the most cost-effective access to clinical labour. The scientific expertise and 'ethical constraints' of clinical trials based in the United States have, in the eyes of industry representatives, become too expensive, partly because of the prohibition on the use of prisoners as human subjects in the 1970s, and because of the paucity of treatment-naïve patients. As a response to this perception of declining profits, clinical trials are following in the path of manufacturing and assembly-line work and being relocated to environments where the costs and conditions of labour are less onerous.

Taken together, oöcyte markets and clinical trials constitute the emergence of a new market in clinical reproductive labour, one that is developing in close synergy with pre-existing transnational economies of feminised labour (domestic, sexual and maternal). Our account above demonstrates that women who participate in any one sector of this reproductive economy are likely to migrate to another, so that the boundaries between actual biomedical, reproductive labour on the one hand, and sexual and domestic labour on the other, are extremely fluid.[17] These sources also point to the complicity of beleaguered, debt-burdened national governments in competing for, promoting or at least ignoring the development of markets in biomedical reproductive labour in their countries. Some governments, it would seem, are looking to the reproductive labour of their populations as a means of inserting themselves into the global exchange of scientific and biomedical knowledge; others, like India and China, appear to be positioning themselves as both developers of new biotechnologies and suppliers of reproductive tissues.

In all these instances, what is striking is the structural resonance between the geopolitics of debt peonage—a central feature of neoliberal globalisation—and the proliferation of various forms of directly embodied indebtedness. Traditional female work has always had an ambiguous relationship to both liberal ideas of self-possession and a Marxist understanding of true wage labour. As Pateman's forceful analysis of modern contractual relations (1988) demonstrates, labour contracts that specifically evoke female bodily capacities—prostitution, surrogacy, and domestic/maternal labour (as domestic servant and the marriage contract)—are concerned precisely with depriving women of the rights of control and disposal over such capacities. Contracts concerning feminine bodily capacities (to labour, reproduce, or sexually pleasure) are, Pateman argues, concerned with establishing one party's control over the other's capacities, and with denying them the right of civil self-possession assumed to be a universal characteristic of contractual

individualism. Hence, specifically feminine work often involves another's use of the female body rather than the performance of tasks and an expenditure of labour power per se. This ambiguity is endemic to the new forms of biomedical and clinical labour, all of which require a direct, often highly experimental, involvement of the body's biology in the creation of surplus value.[18]

Property, Debt and Desire—Analysing Reproductive Labour in Historical Context

How can we respond to the theoretical and political challenges posed by these new forms of reproductive and biomedical labour? In what sense are they continuous with the longer history of reproductive labour in the capitalist economy?

Of particular importance here is Yann Moulier Boutang's work (1998) on the history of slave labour and its relationship to what Marx (1867) termed primitive accumulation, a pre-capitalist mode of often violent primary resource acquisition (land, mineral wealth, forests, etc.) which both gives capital its resource base and dispossesses traditional guardians, thus creating a free labour force. Boutang argues that Marx's concept of the wage contract, which presupposes the worker's freedom to dispose of his capacity to work, mistakenly neglects the persistence of enforced, coercive labour in the accumulation strategies of capitalism (1998). In Boutang's account, primitive accumulation no longer appears as the pre-history of capital, a moment of violent expropriation destined to be overcome by the true form of capitalist labour—the wage contract—but rather emerges as a recurrent necessity of capitalist accumulation. There is no simple progression from slavery to the freely engaged wage contract, but rather a continuum that shifts in accord with the history of power struggles. As a consequence, Boutang is able to reconsider the history of the free wage-labour contract from the point of view of slave labour, and the metropolitan, urban or hegemonic forms of capitalist production from the point of view of the peripheries. His work allows us to consider extreme forms of bodily indebtedness—of the kind we are now seeing in the sale of organs, eggs and biomedical labour in the poorest countries of the world—as wholly consistent with capitalist accumulation strategies. Moreover, his work resonates with Pateman's (1988), in so far as she demonstrates the persistence of coercive, expropriating power relations in contracts (labour, marriage) concerned with property in the person. Crucially, Boutang identifies the more extreme forms of labouring indenture as the point of greatest fragility in the capitalist economy: paradoxically, it is at the point where the capitalist wage relation becomes the most coercive that it also exposes itself to the greatest risk of exodus or mobility on the part of those it seeks to subordinate.

Working on a similar intuition, feminist and post-colonialist theorists such as Hilary Beckles and Kamala Kempadoo have explored the pivotal role of female reproductive labour in the slave economies of the Caribbean. In his history of female slavery in Barbados, for example, Hilary Beckles points out that, unlike male slaves or labourers, the slave woman was valuable because she could 'generate three income flows: from labour, prostitution and reproduction' (1989, 144). Indeed, the free reproductive labour of the slave woman, suggests Beckles, was integral to the primitive accumulation of the workforce itself and thus a defining moment in the constitution of a fully-fledged capitalist economy. As Kempadoo notes, rape, concubinage and prostitution produced children who could make no legal demands on their white fathers, and thus were precluded from

all the property rights associated with inheritance (1999, 7). Moreover, the sale of slave women's bodies for prostitution intensified in periods of economic slump, so that sexual labour functioned as a fallback source of income for the plantation economy as a whole.

A number of feminist theorists have referred to the history of female reproductive labour in the colonial world as a way of thinking about the contemporary resurgence of informal female labour and its relationship to the global restructuring of capital. Kempadoo (1999) stresses the historical resonance between the role of reproductive labour in the early plantation economies of the Caribbean and the proliferation of apparently new forms of highly mobile, highly informal kinds of female labour in the 1980s. According to her analysis, the neoliberal reforms imposed by the World Bank and IMF have effectively amounted to a process of re-colonisation, one which has had an overwhelming effect on the realm of female, reproductive work. Kempadoo is concerned with the sudden resurgence of prostitution and occasional sex work as a survival strategy for women in the Caribbean. Her analysis, however, is relevant for all regions of the world affected by neoliberal reforms and could be extended to other forms of female or feminised work such as domestic, maternal and biomedical labour. Kempadoo suggests a number of salient points of comparison with contemporary forms of female reproductive labour. Not only does she point to the pivotal role of female labour within the colonialist economy but she also notes the fluidity of female value-creating work and the absence of clear divisions between maternal, domestic and sexual labour, mother and whore, for female slaves. In other words, the history of female slaves calls into question both the defining distinctions of political economy—that between productive and reproductive labour, indenture and labour per se—and the normative value of modern European kinship, family and fantasy structures (such as those presumed by psychoanalysis).

The value of Kempadoo's work—and its potential usefulness as a way of thinking about biomedical, clinical and reproductive labour today—lies in its immediate attention to the imperialist and transnational dimension of political economy and sexual politics. Whereas most early feminist work on reproductive labour tended to focus on the First World nuclear family and the Fordist family wage (Delphy 1984), this literature focuses on the peripheries of global capitalism. It makes clear that the sexual division of labour is inseparable from issues of race, imperialism and unequal exchange, including the power relations that exist *between women*. In particular, it offers important insights into the way the market value of bodies and their labour is determined, not merely as a function of economic considerations but also as a function of desire, fantasy and imaginaries of race.[19]

Finally, this kind of analysis is able to analyse extreme forms of violence and coercion without rendering woman a passive victim. If female reproductive labour was crucial to establishing the stratifications of the international labour market, notes Kempadoo, slave women were also notoriously active in anti-colonial rebellions. Ehrenreich and Hothschild (2003) point to a similar ambivalence in the experience of migrating women workers today, where mobility may represent both a pressing economic necessity and a means of escaping all kinds of oppressive power structures, from indigence to the constraints of traditional female sex roles.

This point is worth stressing in that the assumption of passivity seems to be a particular danger when analysing women's bodily work. An interesting dichotomy thus emerges in bioethical responses to women's work, depending on whether it is perceived to be sexual or maternal in nature. The most frequent response to international prostitution is to presume that all forms of sex work involve slave trafficking and

therefore demand a prohibitionist response. Here, prostitution is reduced to a form of pure self-commodification, where the sale of sex is assumed to imply an utter abdication of all bodily autonomy. In relation to biomedical and reproductive labour, the response is markedly different. Often the generosity of the other woman is presumed, as if her services were a gift rather than a form of labour. There is a similar tendency in feminist bioethical work to want to resolve the power relations by prohibiting commodification in favour of the gift from one woman to another. This ethics of generosity ends up institutionalising the self-sacrifice of the other woman. Yet as Pateman's (1988) work suggests, and as analysis of the human tissue gift economy demonstrates (Waldby and Mitchell 2006), gifting under contemporary conditions of highly capitalised life sciences is often simply a way to expropriate donors and deny them rights over their bodily material. On the other hand, when we consider tissue vending as a form of labour, even of the extremely coercive kind, we avoid these romanticising and victimising tendencies and open up the possibility that present labour relations may be subject to contestation.

Conclusion

Our work suggests that women's reproductive participation in the global tissue economy needs to be understood explicitly as a form of labour. As Dickenson (2007) argues, understanding oöcyte donation and vending in this way strengthens women's rights over their material and their bodily integrity, precisely because it demonstrates the resemblance between reproductive labour and the intellectual labour (scientific, legal, commercial) which is much more fully recognised and protected within the bioeconomy. As many commentators have noted (Waldby and Mitchell 2006; Dickenson 2007; Boyle 1996), the property claims around intellectual property have a Lockean basis. Locke defined property relations as emerging from the addition of intentional labour to natural resources, a definition which is institutionalised legally in the property relations around human tissues. It has been used to deny the tissue donor's property rights, on the grounds that their bodily material is simply a naturally occurring resource, to which they do not contribute. Only the intellectual labour of the scientist who manipulates tissues in the laboratory appears as valuable activity (Wald 2005; Mitchell 2004). To understand the production of reproductive tissues explicitly as work confounds this distinction, and links up reproductive labour with other forms of subordinated and devalued labour in the husbandry and ordering of natural resources, especially by indigenous peoples. The Lockean definition of property provides a structural link between human tissues understood as *Res Nullius*, unimproved matter belonging to no one (and hence able to be taken) and *Terra Nullius*, the legal doctrine that permitted populated territory to be seized by European colonisers on the grounds that indigenous peoples passively inhabited their landscape. If the contribution of labour is explicitly recognised, then this level of expropriation becomes illegitimate under the liberal terms of property.

We recognise that casting reproductive participation as labour is not an exhaustive solution to the subordinated position of poor women who are compelled by circumstance to sell their tissues. It does provide, however, certain models for the legitimation, recognition and protection of women providing material for the global biotechnology industries. Over the last 30 years, sex workers have organised very successfully on the basis that transactional sex is labour. As we noted above, both oöcyte vending and transactional sex are instances where women provide contractual use of their bodily capacities to

others. Sex workers have organised on this basis, and successfully lobbied (in some countries at least) for regulation of sex work as labour, with rights not only to sufficient wages but also medical care, occupational health and safety, natural justice, work security and rights to set limits on the demands made by clients (Miller 2004; Alexander 1998).[20] Finally, considering oöcyte vending as labour aligns it with other kinds of precarious, contingent and intermittent labour that services the knowledge economies (Neilson and Rossiter 2005), labour that is 'peripheral in terms of rights, but central in terms of the ... value produced' (Foti 2004). In short, the idea of clinical and reproductive labour provides an organisational as well as conceptual traction on a rapidly developing field of exploitative social practice, and a way to link the agency of female vendor populations with contiguous forms of subordinated agency and activism.

NOTES

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1. The OECD birth rate dropped from 2.4 in 1970 to 1.6 in 2000. By 2000, only Australia, New Zealand, Ireland and Iceland had birth rates above replacement level. Most of the decline in birth rate occurred between 1970 and 1985, with a slight increase post-1985 in some OECD countries (the United States and Nordic countries). Across the OECD, two children is the norm, with many people delaying parenting until they have completed their educations, achieved financial independence, and are in secure jobs and secure relationships. Higher levels of education, greater difficulties in achieving financial independence than previous generations, significant levels of relationship breakdown, and higher levels of voluntary childlessness have all contributed to the declining birth rate (Sleebos 2003).
2. For example, the Australian Treasurer, Peter Costello, in his 2004 budget speech, exhorted the nation's women to have three children: 'one for dad, one for mum, and one for the country'.
3. We are using the term 'biopolitics' as it derives from Foucault's work, to describe ways in which the bodily vitality of populations (labour power, fertility, sexuality, health) is enrolled in political and economic processes, and the ways in which states and institutions invest in this vitality. On Foucault's analysis, the body thus becomes the primary political medium for relations between state and population (Foucault 1979, 2003).
4. The recent introduction of a 'baby bonus' payment has coincided in Australia with a slight upturn in the birth rate. This is, however, in the context of a long-term decline.
5. In Australia and New Zealand, for example, the number of both pregnancies and live births involving ART trebled between 1994 and 2003 (Waters, Dean, and Sullivan 2006).
6. Autopoiesis is the process whereby biological material is self-organising and self-generating.
7. The US Centres for Disease Control and Prevention report that in 2002 alone, donated oöcytes were used in 13,183 (11.4 per cent) of the 115,392 procedures involving assisted reproductive technology (Steinbrook 2006).

8. SCNT involves the creation of an embryo not by the usual fusion of egg and sperm but through the *in vitro* insertion of the nucleus of a cell from an adult's tissues into an oöcyte. The oöcyte has had its own nucleus removed to make way for the introduced nucleus. This creates an embryo with the genome of the adult from whom the nucleus was taken. Such an embryo could be used to develop embryonic stem cell lines with the genetic material of an adult donor, which could in turn be used to produce transplantable tissues genetically compatible with the donor.
9. States that currently allow SCNT research are Australia, Belgium, China, India, Israel, Singapore, South Korea, the United Kingdom, and the United States (if privately funded).
10. The now discredited Professor Hwang's work in South Korea gives an indication of the ratios of oöcytes needed to make a viable blastocyst, and of blastocysts needed to strike a viable stem cell line. In one of his studies, 16 donors produced 242 oöcytes, which in turn produced 30 blastocysts and, finally, one cell line (Hwang et al. 2004). In more recent revelations, the Seoul University inquiry into Hwang's activities found that between November 2002 and November 2005 his laboratory used 2,061 oöcytes produced by 129 women, representing an average of 16 oöcytes each (Steinbrook 2006).
11. The chronic shortage of reproductive oöcytes in gift-oriented national donation systems is well documented. See, for example, Murray and Golombok (2000) and Heng (2006) on the United Kingdom and Singapore, respectively.
12. An exception here is Mies (1998).
13. Gift systems for human tissues are the historical norm in most democratic states that regulate biotechnology. The origins of this norm lie in the post-war adaptation of military blood collection systems for civilian use, and their association with collective good and national belonging. The ethical superiority of gift systems has been recently drawn into question as commercial biotechnology companies use free gifting to source commercially valuable tissues, without recompense to donors. Hence the free giving of tissues is often the starting point for significant profit for biotechnology firms (Waldby and Mitchell 2006).
14. This is according to Adam Balen, a British professor of reproductive medicine, interviewed by *The Observer* (Barnett and Smith 2006).
15. Surrogate mothers are implanted with an already conceived embryo, and carry the fetus to term without making any genetic contribution of their own.
16. One business model for this kind of enterprise is the Bedford Stem Cell Research Foundation, founded in 1996 in the Boston area. The Foundation claims to be the first organisation in the world to solicit women to 'donate' oöcytes purely for research. Since 2000, it has recruited oöcyte vendors from the Boston area via newspaper advertisements, paying them about US$4,000 per procedure. According to Sexton (2005), the majority of oöcyte providers for this program are unemployed women. The Foundation conducts research within its own laboratories, supplies research oöcytes to Advanced Cell Technology, and is set to supply other Boston area researchers. The website (www.bedfordresearch/org) emphasises the use of 'mild hormone stimulation' to avoid hyper-stimulation syndrome, and the generally high level of screening, informed consent and ongoing care provided for oöcyte suppliers (Vogel 2006).
17. On this point, see Barnett and Smith (2006).
18. In her work on organ economies in India and South America, Scheper-Hughes (2001) has shown how the 'extra' organ comes to be figured as an expendable commodity for those who literally have nothing left to sell but their bodies. Donna Dickenson makes the

interesting point that the sense of ethical horror surrounding some of these technologies comes from the sense that the 'body' itself—both male and female bodies—is now available for commodification (2007). In this sense, she argues, the fear is that 'we are all becoming women now'.

19. For example, the differential value of white and non-white women's eggs, as analysed above, translates into a stratified labour market in biomedical labour, where the tissues supplied by the non-white woman are good only for experimental, therapeutic and non-reproductive purposes. Moreover, when couples travel to Southern European locations to buy eggs, it seems that their perception of the ethical nature of their actions depends on a presumption of generosity on the part of the other woman. As is typical in other tourist transactions, there is a willingness to believe that the other woman is motivated by a uniquely feminine, indeed maternal, desire to give rather than brute economic necessity. On this point, see Barnett and Smith (2006).

20. See numerous sex worker union websites such as those for Scarlet Alliance (Australia) and the International Union of Sex Workers (UK based).

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