

**CORPUS**

**AN INTERDISCIPLINARY READER  
ON BODIES AND KNOWLEDGE**

EDITED BY  
MONICA J. CASPER  
AND  
PAISLEY CURRAH

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CHAPTER 2

# DISTRIBUTED REPRODUCTION

MICHELLE MURPHY

Why should our bodies end at the skin?

—Donna Haraway (1991)

Invest in a girl and she will do the rest.

—slogan of The Girl Effect campaign, Nike Foundation (1992)

From this point of view a given amount of health impairing pollution should be done in the country with the lowest cost, which will be the country with the lowest wages.

—Lawrence Summers, leaked World Bank Memo (1991)

WHERE DOES BIOLOGICAL REPRODUCTION RESIDE? “In bodies,” is a probable response, perhaps framed by a birth story populated with genitals, sperm, eggs, kinship, family, contraceptive ethics, health care, and heteronormative futures that promise alignment with a “good life” of house, job, and affective bonds. Or the answer “in bodies” might be accompanied by claims to human rights coupled with critiques of coercive racist states and grief-filled accounts of lives lost due to negligence, violence, or scarcity. Tectonic forces conspire to offer “bodies” as an obvious answer to questions of human reproduction, not least because life and death hang on this process. Laws that direct reproductive rights and responsibilities to individual women, the medicalization of birth in all its uneven guises, and the “global facts of life” of economic development projects all converge to outline an individual embodiment for reproduction, drawing a perimeter around reproduction that has tended to designate the body of the

possessive individual as reproduction's rightful home and liberal humanism as reproduction's proper imaginary terrain.<sup>1</sup>

What kind of epistemic concern has reproduction become? Yes, human biological reproduction is an embodied concern, posited through the right to bodily integrity, envisioned and managed through technoscientific practices, and experienced phenomenologically as a fleshly capacity shaped jointly by larger structural conditions (such as racial, capital, and social formations) and smaller micrological entities (cells and ribbons of nucleic acids precipitated for us by technoscience). Reproduction does happen in bodies, and lives become precarious in birth and pregnancy. But does reproduction stop there?

In this chapter, I want to address the question of what counts as biological reproduction by tracking the dispersion of sexed living being into its infrastructural and political economic milieu. To do so, this chapter considers how to (re)route reproduction through the social science infrastructures that wind the globe collecting data about birth rates, literacy, infant mortality, and microloans. It also considers the itinerary of bisphenol A as it is extruded by a plastic manufacturing process, dispersed through air, wafting here more than there, or leaching out of commodities into fluids that humans digest, collecting in bodies, human and nonhuman, disrupting metabolic processes, altering living being as it develops in time. In what sense do these two descriptions count as reproduction?

### CONCEIVING REPRODUCTION

Before considering these two instantiations of reproduction, I want to spend some time tracking the intellectual and political stakes of conceiving of reproduction. As the anthropologist Marilyn Strathern points out, many of the very English words associated with reproduction—such as “conception,” “creation,” and “generation”—are also associated with acts of knowledge production.

Twenty-five years ago, Donna Haraway asked, “Why should our bodies end at our skin?” offering the “material-semiotic figure” of the cyborg as an ontological politics for attending to the ways living being was already constituted via technoscience in 1985, near the end of the cold war, in an emerging “informatics of domination.”<sup>2</sup> At that moment, feminist technoscience studies was resisting a politics that posited bodies as natural entities and instead insisted that any question of “nature” or “biology” at the end of the twentieth century was already conditioned by technoscience.

In a similar spirit, one might pose the question, what is the ontological politics of embodied reproduction? In the same way that contemporary questions concerning the status of “sex” and “race” can be historicized as

contestations over the terms of their existence—as contests over what kind of phenomena “sex” and “race” are—I ask: If they are materialized as “biological” forms, then residing where, with what boundaries, made manifest by what scientific techniques? If historical forms, explained by what conditions, at what scale? If social praxis, constituted through what relations, charted by whom? In other words, this chapter conceives of reproductive politics—and the question of what is reproduction—as a struggle over ontology, tracking not only how reproduction is hegemonically materialized in and through bodies, but also how countermaps of reproduction's uneven and dispersed worldly terrains might be crafted.

My effort to critically map reproduction's ontological politics is inspired by Ann Laura Stoler's suggestive and reflexive claim that several decades of recent critical scholarship in the humanities has produced a particular “regime of truth” on race, in which antiracist (and, one might say, also feminist) accounts of “race” start and end with the premise that “race” is socially constructed within nationalist, economic and colonial forms; “Race” is thus held as historically specific, and not fixed, even if it is a felt condition with material consequences.<sup>3</sup> This historicity and madeness of race can also be in turn historicized, understood as part of an ongoing struggle over the terms of existence of “race” as a differential condition in the world. That this chapter uses the phrase “sexed living being,” for example, demonstrates how it already participates in an ontological politics, placing “sexed” as an adjective, a form of power-laden becoming, which materializes living being in historically specific ways. *Sexed*, like *raced*, designates difference as an evoked, nonoriginary modifier of living being.

Science and Technology Studies (STS)—an interdisciplinary conversation begun in the 1960s concerning the immanence of politics and culture in epistemological practices—has also been obsessed with the production of things-in-the-world out of the techniques, clinics, laboratories, models, and field sites of scientific endeavors.<sup>4</sup> Today, feminist STS scholars have shown that reproduction—as a process of living being—has not only been technologically altered but is caught in regimes that compel its malleability and generative capacities.<sup>5</sup> Through biomedical practices, reproduction in the contemporary moment can become what Charis Thompson calls a “Biotech mode,” particularly at its micrological and clinical scales, in which tissue cultures, in vitro fertilization, PCR, genomics, virology, and bioengineering transform the generative lively capacities of the micrological substrates of cells, nuclei, DNA, proteins, and molecular processes into important forces of production for the creation of commodities, biovalue, and biocapital at the very same time that they constitute life.<sup>6</sup> Relatedly, since the 1970s, cheap mass-produced methods of contraception, sterilization, and abortion have offered cold war, postcolonial, and feminist projects alike techniques

to redirect, alter, and preempt the fertility of millions around the world. Through assorted nationalist and transnational family planning projects, women in discrepant and diverse sites are nonetheless hailed similarly as embodied subjects whose fertility can and should be managed, even if more comprehensive infrastructures of health care are absent.

In these ways, in my lifetime, the dominant ontological status of human sexed living being, entangled as it is in technoscience and governmentality, has reversed itself. Although feminist and antiracist STS scholars in the 1980s and 1990s tended to overturn scientific accounts of the natural givenness and fixity of sexed and raced bodily kinds, today they tend to track the artifice of sex—how sexed living being has retwisted a domain of alterability, imbued with the generative capacities of making and recombining, open to both fostering and preemption. At the same time that recombinatory capacities of life inaugurate new forms of capitalist value, they also open up the possibility of challenging and materially disassembling heterosexuality, racialized kinships, and sexual embodiment, opening life to queered reassembly. Thus, I want to think critically about the stakes of this current ontological politics of reproduction, in which it is celebrated for its malleability and changeability, in which the fostering of life is also at the same time understood as its alteration, management, and speculative preemption.

Feminists have played their part in conjuring this ontological politics of sex in the age of technoscience, having spent enormous energies showing how, in Judith Butler's formulation, the materialization of bodies as matter-prior-to-power is in fact power's greatest effect.<sup>7</sup> To this sense of sex and reproduction as made and malleable is often sutured the liberal feminist insistence on the female individual as the ethicized and responsabilized subject in relation to reproduction—compelling choices and acts at this individual embodied scale in the management of reproduction relative to biomedical possibilities. The infrastructures that support individualized choice might ethicize the female subject as responsible for reproduction and excise culpability of larger conditions of possibility. Overall, the two normative axes in the emergent ontological politics of bodily reproduction in the age of technoscience are, first, a malleable and managed embodiment *and*, second, an ethicized possessive individuality located in the property of the body.

Although continuing to insist on the material life-and-death consequences of reproduction, I consider here a figuration of reproduction as a *process* that exists at *macrological* (not merely micrological and bodily) registers and which is *extensive* geographically in space and historically in time. I will call this the distributed ontology of reproduction, or more succinctly, *distributed reproduction*.

Why distributed reproduction? "Reproduction" as a term has only in the last half century become apprehended as a phenomenon that happens

primarily in bodies rather than at larger scales; thus, it may be fruitful to think suspiciously about this supposed common-sense site of the reproductive body and what it forecloses. A thread of "reproductive health" politics now entangles much of the world, manifest through NGOs, local clinics, and grounded projects as much as transnational organizations that offer grants and instructional guidelines. The emergence of "reproductive health" was fought for in the early 1990s by an emerging class of feminist development and family planning professionals who sought a more feminist-friendly way of articulating the need for health services, untangled from the coercive, sometimes violent, often misogynist, and deadly regimes of population control that had characterized much of the cold war/postcolonial period. The framing of reproductive health has tended to foster (not without debate) a politics of either improved health services or individualized reproductive rights and "empowerment."

Without negating the often life-enhancing effects of the work "reproductive health" has done, taking a step back as a historian and STS scholar raises questions about what condensing reproduction to an embodied and medicalized "reproductive health" forecloses. How might critical feminist health politics be reinvigorated by questioning how "reproduction" both includes and complexly exceeds the body, thereby mapping body as unevenly working through bodies in space and time?

More specifically, thinking through "distributed reproduction" builds on a set of less dominant, though still influential, feminist figurations of reproduction as entangled with political economy. There is an important itinerary of feminist, antiracist, and decolonizing critiques of capital that have excavated how reproduction *exceeds* the body through social reproduction, so that the politics of housing, war, immigration, labor, pollution, incarceration, and care giving are all profoundly also questions of reproduction; a list developed in the 1970s and to which today we might add politics of development, of biomedicine, of technoscience, of biocapital, of racial states reconfigured in the name of antiterrorism, of preemptive and privatized war machines, of pharmaceuticals that call for markets of perpetual risk, of affective economies, of planetary environmental crisis, of citizenship in terrains of displacements, of global capital's transnational disjunctures, and of biopolitics and necropolitics alike.<sup>8</sup>

Since the late 1980s, the Bangladeshi feminist Farida Akhter has offered trenchant critiques of both population control in its imperial and nationalist registers, as well as "reproductive rights" as its feminist alternative. In 1989, organized by Akhter, feminist activists and intellectuals primarily from South Asia and Europe wrote a declaration critiquing the ways cold war experiments had so thoroughly tied reproduction together with capitalism and technoscience—a knot they saw as facilitated by the ways liberal

feminists had consolidated around a vision of a universalized female ethical subject who just needed her reproductive rights to do right. The Declaration of Comilla was important for the way it situated the politics of reproduction within the “engineering and industrialization of the life processes” more broadly.<sup>9</sup> In this declaration, reproduction stretched beyond bodies to implicate the multiple domains of industrialism and its environmental effects, family formations, agriculture, and the ownership of biodiversity, thereby necessitating a sweeping critique of both technoscience and capital. Their vision of an expansive reproductive politics was not remediable by the free choices of an individualized ethical subject.

Further, Shellee Colen’s influential notion of “stratified reproduction” has aptly named how “kinship” is hierarchically rearranged by structures of race, sex, and class in transnational political economies.<sup>10</sup> Marilyn Strathern has helpfully developed a notion of “dispersed kinship” to ask complex questions about the shifting range of “procreators” who take part in, “assist,” and hence are in “relation to” reproductive acts as mediated by technoscience, property forms, and knowledge production.<sup>11</sup> The notion of “distributed reproduction” is kin to all these moves to apprehend reproduction as stratified and dispersed, as well as the project of “reproduction justice” fashioned by Asian Communities for Reproductive Justice and the SisterSong Collective in the United States, which builds on legacies of work by anti-racist feminists and radically expands the sites where reproductive politics occurs to “issues such as sex trafficking, youth empowerment, family unification, educational justice, unsafe working conditions, domestic violence, discrimination of queer and transgendered communities, immigrant rights, environmental justice, and globalization.”<sup>12</sup> This itinerary of critical work on “reproductive justice,” stratified and dispersed kinship, and more provokes a need to rematerialize what counts as reproduction itself. It is precisely because bodies matter that there is urgency in tracking how bodies are discrepantly enrolled, altered, and announced as alterable by processes and structures that exceed the body proper.

For all these reasons, and more, I want to describe this distributed ontology of reproduction as composed of multiple *formations of reproduction* in a way that resonates with the phrase “formations of capital” as a description of historically specific relationships that produce and mobilize “capital.” Fortunately for my project, there is a long history of understanding reproduction as a process of aggregate living being. “Reproduction” as a term that applies to biology emerged in the eighteenth century, amid the revolutionary installation of liberal politics that enshrined individuality and private property during the dawn of industrial capitalism. Reproduction has been simultaneously a term that describes the maintenance of *species being* and a term that describes the maintenance of the relations that constitute

capital accumulation. Buffon, the famous French comparative anatomist, was the first to use the term “reproduction” to name a process of maintaining a species, a process that generates and maintains the stability of form and ways across generations.<sup>13</sup> Thus reproduction was at its inception an extensive process, binding and producing an aggregate living formation—the species—entangling, working through, and creating the individual organisms of that species. In other words, eighteenth-century “reproduction” was a process of replacement, sameness, and consistency that linked embodied individuals together as a common kind. Reproduction worked through bodies, but exceeded them.

Within the evolutionary epistemologies of the nineteenth century, “reproduction” continued as a species-level process of living being, yet one that occurs in extensive spans of time, constituting the ongoing historicity of life.<sup>14</sup> Moreover, reproduction as an evolutionary process did not simply maintain species-kind, but instead produced the *difference* that natural selection sorted. Reproduction was thus rendered a selective becoming-in-time that generated variation—a living difference engine. Reproduction stretched beyond mere mating, to occur at time scales larger than the life of the individual organism, into the recesses of evolutionary time. Already in the nineteenth century we can see the seeds of our current ontological politics, where reproduction becomes a process producing variety, difference, change, and innovation—an evolutionary process that by the early twentieth century was considered to be in need of rational guidance and engineering by technoscience, giving rise eventually to the progressive and genocidal projects of eugenics. Evolutionary macrological ontologies of reproduction are haunted by the selective deaths—by natural or engineered selection—that bring future life into new form. Therefore, the project of imagining a distributed ontology of reproduction is noninnocent, and it has its own deadly black holes in need of disavowal, making the retreat to the body all the more understandable.

This chapter hopes to reanimate this history of understanding reproduction as a distributed process that manifests in and connects, but is not reducible, to bodies. If reproduction is a distributed process of living being already transformed by birth control, biomedicine, biotechnology, infrastructures, pollution, housing, militarization, development, criminalization, nation-states, queer politics, labor-relations, and so on, what is an ontological politics of reproduction that can render legible how life is constituted through the infrastructures and political economies that exceed sexed and raced bodies as such? How to stretch attention to the temporally and spatially extensive matrixes of technoscience and political economy that do not just converge on, but are themselves the process(es) of reproduction?

In this endeavor, reproduction is reiterated in its initial double formulation as a process of biology and political economy. To insist on reproduction as a macrological *process* that conditions life is also to think harder about how “processes”—metabolic, chemical, biotechnical and engineering—have themselves become patentable, and thus amenable to proprietary formulation in commodity circuits. Thus, imagining distributed reproduction as an extensive process must be attentive to the evasive tactics of such property relations, but also draw them into constant critical legibility toward politicization.

In other words, if the conceptual goal of distributed reproduction is to provoke a different kind of “reproductive politics” than is commonly practiced, one critically implicated in the unevenly dispersed and spatialized relations in a world riven by capital flows, racialized geographies, wars and nation-states, then it is at least partially because I also want to highlight how relations of reproduction are entangled with, but not simply subsumable to, relations of production.<sup>15</sup> To give this account of distributed reproduction some empirical meat, I proceed by offering two entry points (among many possibilities) into mapping the formations of reproduction that make up its distributed ontology as it has congealed since the end of the cold war and in the aftermath of postcolonial projects of “modernity.” The first is symptomatically represented by the figure of “human capital” crystallized in a process I call the *economization of life*, while the second takes the form of uneven saturations of chemical exposure.

#### A GIRL MAKES THE WORLD

At the 2009 World Economic Forum, a private nonprofit summit held annually at Davos, Switzerland, world leaders, economists, CEOs of Fortune 500 companies, supranational elites, and philanthropic luminaries met to discuss economic development in light of the urgent global recession. Amid the presentations on how to rescue global capital was a “popular” panel on the “Girl Effect.” “The Girl Effect” is the name of a development campaign initiated by the Nike Foundation and Novo Foundation (affiliated with Warren Buffet’s family) that argues the best way out of the world’s current economic “mess” is to “invest in a girl and she will do the rest.”<sup>16</sup> The girl will save the world because decades of social science data now calculate that if her education is increased, she will have fewer babies and she will have higher wages; Unlike her brothers, she will share her wages with her family and will more likely pay back loans; She will marry at an older age and have a higher dowry value.<sup>17</sup> As Lawrence Summers influentially declared in 1992 as chief economist of the World Bank, the girl is “the greatest investment of all.”<sup>18</sup> For Nike, a corporation already successfully cathected to exuberant

and individualized “Just Do It” advertising that draws on individualized desires to self-improvement, the ideology of “girl power” tethered to development made synergistic sense.

The girl in question is a historically specific subject figure. She is the longstanding sexed and racialized concern of development taken back to childhood. A world-enveloping social science infrastructure has for decades attended to the living being of the woman this girl-child will be/was born by. With ferocious intensity, beginning in the 1960s, the fertility of poor nonwhite women around the world was declared a ticking time bomb by US foreign policy, imperiling democracy, capitalism, and the planet. The population bomb tethered to feminist aspirations of the individual management of one’s own fertility—the ambition of “seizing the means of reproduction” at the scale of the individual—gave rise to a proliferate international family planning industry.<sup>19</sup> For the first time in history, cheap mass-produced birth control and industrial-scale sterilization offered the technical means to materially govern human reproduction en masse, while tantalizingly promising a freedom from unwanted fertility for the individual. The question of human fertility, in turn, became pivotal to the postcolonial project of fostering and governing “the economy” as it emerged as the primary concern of state governmentalities. “The economy” is itself a historically recent entity, born in the twentieth century of macroeconomics and state data collection that offered new measures such as national unemployment rates, rates of inflation, and, crucially, gross domestic product (GDP) as the governable and alterable qualities of a nation’s “economy.”<sup>20</sup> Moreover, with decolonization, the planet was remapped through the universalized unit of the nation-state and hence reterritorialized as a landscape of governable economies connecting and differentiating regions of the planet into open and closed markets, developed and underdeveloped economies. Likewise, demographic data collection increasingly imbued national “population” with governable qualities: literacy rates, birth rates, mortality rates, but also measures of the desire to control fertility and measures of the availability of the commodities and services to do so.

The term *economization of life* names the historical emergence of forms of governmentality that sought to govern living being, particularly sexed-living-being and fertility—for the sake of fostering economic development and enhancing national GDP.<sup>21</sup> The economization of life names a historically specific formation organizing life, not for the purpose of generating surplus value or producing commodities, but for the sake of “the economy.” Best known through population control and family planning, the governmentalities forming the economization of life grew out of racist eugenics logics that had flourished earlier in the twentieth century. With the economization of life, however, the project of intervening and altering reproduction

was directed at enhancing *economic futures*, not racial evolutionary futures. While population control practices were typically still animated by racialized narratives of “civilized” and “underdeveloped,” the explicit purpose of governing reproduction was for the sake of altering GDP, not purported racial destinies. Thus, the concept of the economization of life draws attention to the significance of sexed living being to the rise of neoliberal governmentality in postcolonial itineraries.

Important to comparative measures of economic development was not only the measure of GDP (which varied widely between economies of different sizes) but “GDP per capita,” for which population growth has an enormous calculative effect. By the late 1960s, one RAND economist influentially calculated that money spent for each “averted birth” was “100 times more effective” in raising per capita GDP than the same amount spent on “productive investments” such as machinery or agriculture—a claim that helped to further spawn cost-benefit analyses for specific family planning interventions.<sup>22</sup> This calculus was crucial in directing US foreign aid funds to family planning over health, food, or kinds of aid, as well as making family planning crucial to President Johnson’s domestic “war on poverty,” making the United States not only the largest twentieth-century funder of population control, but also the most important global distributor of contraception.<sup>23</sup> At the ideological heart of population control was the claim that reducing population growth rates was critical to creating futures of national productivity captured in the measure of GDP per capital. Hence, while eugenic necropolitics declared that some must die so that others may live more healthfully, with the economization of life this logic was translated into some must not be born so that future others might live more abundantly (consumptively).<sup>24</sup>

Though only sketched here, the economization of life is an important feature of the last half-century, underwriting designations of lives more and less productive, lives unworthy of birth, and hence surplus life and “avertable” lives.<sup>25</sup> Thus, while formations of capital rely on the disposability of worker’s lives—the cheapening of “labor power” to the point of its disposal—the economization of life names the extensive and discrepantly expressed formation assembled out of governmentalities, family planning services, contraception, feminism, and social science infrastructures that harnessed birth to the fostering of GDP. In other words, it is a formation of reproduction.

Since the end of the cold war and the many-sited, many-flavored feminist interventions into the violent logics of population control, today the economization of life is increasingly transformed through the figure of “human capital.” Human capital is a subject-figure of neoliberal economics that became in the 1990s central to current practices of development, war planning, education, and state building, supplanting population control and

structural adjustment of the late-twentieth century with a purportedly more humanistic, empowering, feminist, and life-giving alternative. Human capital is defined as the knowledge, skills, values, health, and embodied capacities of people that make them economically productive. As human capital, every person is considered an entrepreneur in his or her own life.

When the World Economic Forum discusses “the girl effect,” they are arguing for investment into a certain form of human capital embodied in girls. Crucially, and as Summers at the behest of the World Bank argued, girls’ education is the best investment not only because it has good rates of returns for the girl, her family, and the state, but also because the same amount invested in education reduces her fertility more than it would if invested directly in family planning.

Here, I might observe the following points: (1) How fertility reduction has become so thoroughly associated with improved economic productivity that it now serves *as a proxy* measure for further removed correlations with economic productivity; (2) How reproductive interventions are temporally pushed forward in the human life cycle to the prechildbearing years of life;<sup>26</sup> (3) How the capacities of living being and the labor of social reproduction are now valued as forms of capital, placing reproduction and capital into a new tension.

The concept of human capital, first forged in the 1960s in terms of farming and fertility, was in the 1970s and 1980s most prominently deployed in human resource management interested in highly educated bourgeois “knowledge workers.” It was only in the 1990s that human capital emerged as a hegemonic component of neoliberal development economics with the World Bank as its epicenter, joining with microcredit projects to herald “poor” racialized females as the most productive site of investment, debt, and entrepreneurialism.<sup>27</sup> In the process, the third-world girl has rapidly replaced the bourgeois knowledge worker as an iconic figure of human capital and the adult woman as the quintessential subject of development. Implied in the hypervaluation of educated girls is the devaluation of the adults that uncaptialized girls grow up to be as a future form of underproductive or even disposable life no longer worthy of investment, and the implicit devaluation of boys who offer lower rates of return.<sup>28</sup>

In sum, reknitting homo economicus as a form of capital embodied in young girls is at the same time a formation of reproduction, in which generative capacities of sexed living being are rearranged, revalued, and brought into new alignments and attachments. The girl effect, in the name of feminism and as a more humanist form of neoliberalism concerned with “human development,” is congealing as the *liberal* neoliberal alternative to more brutal forms of neoliberalism associated with structural adjustment and disinvested infrastructures in the name of free markets. In the current era of

Barack Obama, racialized youth, born into sedimented dispossessions, are reinterpellated as a site of preemption and speculative investment that takes as its object a sexed moment in the individual's prereproductive life cycle. The girl effect is a hegemonic call to build a particular formation of reproduction, in which the burden of fixing capital in the face of its ravages are placed on the shoulders of a particular subject of sexed living being. Here, feminism and capital collapse into one another, and the project of feminism must face itself as an appropriated politics within this noninnocent formation of reproduction. Unlike the project of cyborg politics, the answer to the hypervalued girl is not a human-capital-politics that comes up with yet better ways of turning capital, feminism, and social science to the project of living, but instead reveals how that call—the call to make better feminist fixes—is no longer a subjugated critical epistemology, but constituted hegemonically in formations of reproduction. Distributed reproduction, in turn, passes through the World Bank, microloans, feminism, girls, and Nike sneakers.

Unsurprisingly, while the award-winning YouTube Girl Effect campaign brings tears to the eyes of some, others in the blogosphere are quick to point out that Nike is infamous for its history of exploitative labor practices, taking advantage of cheap, young, and female labor of global export zones. Geographer Melissa Wright shows how exports zones explicitly advertised young women's labor as cheap and disposable, that is as women not needed for the future reproduction of the nation and who themselves do not have futures, to attract the business of companies such as Nike.<sup>29</sup> What knits together the investable girl and the disposable girl are the matrixes that hail their future reproduction, their unconceived (let alone unborn) potential children, as undesired, devalued, and avertable.

#### CHEMICAL ALTERITY

This legible and celebrated figure of the hypervalued girl—a body whose improvement is desired even as her future reproduction is not—resides in juxtaposition with another formation of reproduction making up the tangle of distributed reproduction. This second example of a formation of reproduction moves the text from terrains of purported underdevelopment to Sarnia, Ontario, the “chemical alley” of Canada, a so-called developed country celebrated by (some) Americans for its social welfare infrastructure and peace keeping.<sup>30</sup> Here, the politics of distributed reproduction is not hypervalued, but rendered externalized and uncertain.

With thirty-five major petrochemical, polymer, and chemical factories, Sarnia is one of many concentrated nodes of intensive petroproduction, attracting companies with reduced environmental regulations and

tax breaks, hooking up the planet to oil in snakes of pipelines, tankers, and refineries, bringing “good things to life” and unevenly saturating the world with poisonous and climate altering effluvia. Sandwiched amid this concentration of petroproduction is the Aamjiwnaang first nation, where environmental justice activists have worked with local scientists, feminists, and lawyers to document the first-known case of a dramatic reduction in the birth of boys associated with chronic chemical exposures.<sup>31</sup> Today, only thirty-five boys are born for every hundred girls.<sup>32</sup>

In this second example of a formation of reproduction, I want to attend to the effects on living being that are abjected from economic calculi—the modifications to living being and its reproduction that are ubiquitous and intensifying even as they have become invisibilized or externalized from hegemonic economic regimes of value. Pollution, as the excess of production, an excess turned away from by its creators and by the nation-state, is nonetheless a material and altering presence in living being.

In this formation of reproduction, pervasive, mobile, and accumulated chemicals have saturated nonhuman and human living being with modifying effects to sexed living being at increasingly noticeable levels. Such modifications are embodied individually, with painful and tragic tolls on lives, but at the same time are distributive across individuals (human and nonhuman) into a shared, yet unevenly dispersed, condition of having been already altered. Chemical injury, produced by industrial production or later by commodities, not only causes cancers or poisoning, but alter the material substrates of reproduction, mimicking or disrupting hormonal signals, mutating genomes, and thinning membranes. If living being is now hailed as alterable, and materially transformable in new ways, opening new possibilities for a malleable ontology of life, chemical injury calls for a more critical politics of alterability and greater attention to the kinds, modes, and exercise of power manifest in malleable life.

If temporal displacement is an important feature of the economization of life (in which living being is intervened in now to prevent reproduction later), displacement is also at work in the violent effects of externalized chemical excess. Chemical injury is not just displaced *spatially* with super stacks, toxic trading, and selective incinerator placement to funnel its effects to less-regulated zones, to disenfranchised locations where bodies can be rendered more disposable, but also displaced *temporally*, such that accountabilities exceed the scope of individual lives—accumulating or persisting over time. The possible effects are not only felt at the moment of the exposed organism, not only in the future of potential lives yet to be born, but also in the future generation of possible grandchildren. Research into the effects of the estrogenic chemical bisphenol A (BPA) on pregnant mice has found that the significant effects occur not so much for the fetus



in utero, but for the eggs being formed inside that fetus, and hence effects are manifest for the potential grandchildren who will not be born.<sup>33</sup> Here, the lives not born in Sarnia may well be the effect of exposures endured by their grandmothers.

Although the violence of chemical injury is concentrated in the space of Aamjiwnaang land, a parcel made available to such injury by a colonial history of displacement and racist dehumanizing of first nation people, chemical injury is ever-present as what S. Lochlann Jain calls “commodity violence,” in which the harmful effect of commodities are probabilistic for the population, but not causally isolatable or predictable at the individual level.<sup>34</sup> Thus, it is ironic—or rather constitutive—that when the Canadian NGO Environmental Defense performed a national biomonitoring study called “Toxic Nation,” including not only the family of an Aamjiwnaang environmental activist but also a handful of high-ranking politicians, it was the politicians who proved to have the overall highest concentrations of tested chemicals, more so than any of the citizen test subjects.<sup>35</sup> Is it ironic or constitutive that Lawrence Summers wrote not only the pivotal 1992 document that declared the girl the greatest investment, but also an infamous World Bank memo in 1991 that sarcastically suggested exporting toxic industries to less-developed countries, because “the economic logic behind dumping a load of toxic waste in the lowest wage country is impeccable and we should face up to that.”<sup>36</sup>

As already chemically saturated beings, already changed and not just potentially or intentionally malleable, the ontological politics of reproduction turns on this problem of alterability. The politics of alterability is not just a question of what change to choose. It is also a politics of the differential availability of alteration to stratified subjects, alterations that can be unwanted and not just wanted, that can be life-taking and not just life-fostering. Alterations that not only happen in bodies, but also bind and dislocate bodies across time and space. This connection of industrial production with living being via chemicals is easily politicized as a moral panic over “missing boys” and nonheteronormative bodies. Phrasing this problem as one of “missing boys” tends to uncritically grant “boyhood” and “girlhood” as an a priori status of the fetus, which is then altered into intersexuality or even death, reiterating (in the name of environmental critique) naturalizations of biological sexual difference.<sup>37</sup> Rethinking endocrine disruptors and other body-altering chemicals as constituent elements of a distributed ontology of reproduction hopes to invite much needed collaborations between feminist technoscience studies, transgender and queer studies scholars, and environmentalists to offer better accounts of the uneven political stakes of alterable living being.<sup>38</sup>

### CHANGING THE POLITICS OF CHANGE

As two formations that feature “change,” the politics of human capital and the politics of chemical injury become entwined. Discrepant formations of reproduction intersect to become a complex and contradictory distributed ontology, which in turn demands new political imaginaries. Although feminist have long been predicting the coming world of reproductive technologies, is feminism sufficient to the task of this more multidimensional ontological struggle over living being? What would it look like to craft an account of the distributed ontology of reproduction that shows the possible connective tissue formed through, for example, human capital, chemical injury, the biotech mode of reproduction, and transnational family planning? Reproduction is conjured as an extensive assemblage of formations, drawing divergent domains into its ambit—a process that not only works through embodied lives, but also operates at time scales larger than the human, demanding collective effort.

If my question is how to imagine and politicize distributed reproduction, then the scale of this project is so enormous that I stagger before it as a single person, and even the question dramatically escapes the scope of this chapter. If distributed reproduction can be characterized, at a first approximation, as unevenly extensive in space and time, necessitating both topological imaginaries and temporal politics, it generates such uneven conditions as much as builds on them. Distributed reproduction is constituted out of technoscience, nation-states, capital, and infrastructures as much as out of bodies, living being, sex, and race. The “scattered hegemonies” of distributed reproduction need to be critically traced as much as the alterations to living being differentially politicized.<sup>39</sup> Distributed reproduction is noninnocent, and hence it is not just a domain of life creation but a processional exercise of power that is as necropolitical as it is biopolitical. At the same time, distributed reproduction is binding and attaching, and thus holds open unexpected possibilities for new forms of kinship and alliance across space and time.

It has become a cliché to feel that one is living through a moment of tremendous change. If humans are undergoing a rearrangement of sexed living being, for which this chapter is a symptom as much as a diagnosis, then the feminist dream of valuing social (and cultural) reproduction is turning monstrous. Formations of reproduction herald sexed and raced life as the greatest investment at the same time that other entangled formations of reproduction are produced out of the indifference of capital to its material effects on organisms, with deadly repercussions. Sexuality too is under rearrangement, with the vital stakes of queer desire entangled in capital’s call. What is the political imaginary that might name this skein?

## NOTES

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13. Jacques Roger, *Buffon: A Life in Natural History*, trans. Sarah Bonnefoi (Ithaca, NY: Cornell University Press, 1997).
14. Staffan Mueller-Wille, "Figures of Inheritance, 1650–1850," in *Heredity Produced: At the Crossroads of Biology, Politics, and Culture, 1500–1870*, ed.

- Staffan Mueller-Wille and Hans-Joerg Rheinberger (Cambridge, MA: MIT Press, 2007) and Elizabeth Grosz, "Darwin and the Ontology of Life," in her *Time Travels* (Durham, NC: Duke University Press, 2005) 35–42.
15. Haraway's "Cyborg Manifesto" is often contextualized as a science-positive politic relative to debates in the 1980s about feminism's repudiations of "patriarchal rationality," thereby typically passing over the fact that cyborg was a figure that written relative to Marxist feminism as much as poststructural or posthumanist politics.
16. Text from Nike Foundation The Girl Effect campaign video. <http://www.girleffect.org/>
17. Such correlations are listed in the "factsheet" of the Nike campaign, but are also endemic in the field of development studies. [http://www.girleffect.org/#/fact\\_sheet/](http://www.girleffect.org/#/fact_sheet/)
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19. Murphy, *Seizing the Means of Reproduction*.
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32. Constanze Mackenzie, Ada Lockridge, and Margaret Keith, "Declining Sex Ratio in a First Nation Community," *Environmental Health Perspectives* 113, no. 10 (2005) 1295–1298.
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