



WORMS AND WORKERS: PLACING THE MORE-THAN-HUMAN AND THE BIOLOGICAL IN SOCIAL REPRODUCTION

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HOME / UNCATEGORIZED / WORMS AND WORKERS: PLACING THE MORE-THAN-HUMAN AND THE BIOLOGICAL IN SOCIAL REPRODUCTION

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Typical contents found in a helminthic therapy self-inoculation kit. Source: Skye Naslund.

First dose



The first dose arrived on Molly's doorstep in a nondescript cardboard box. Filled with apprehension and excitement, Molly took the package upstairs to her bedroom and opened it. The innards amounted to something like a children's mock chemistry set. One piece of cloth dressing, one pipette, a few pages of typed instructions, and two small vials – one filled with purified water and one holding only a few droplets. Though Molly could not see them, she knew that suspended inside those droplets lay dozens of *Necator americanus* larvae—hookworms. As per the instructions, she soaked the droplets onto the cloth dressing and adhered the dressing to her bare forearm. Her work was done. Over the next 12 hours, the larvae would burrow through her skin into her bloodstream. From there, they would migrate to her lungs and, after being coughed up and swallowed, they would reach her small intestine where they would grow into adult hookworms. As they attached themselves to her intestinal lining, bloodletting their sustenance, Molly's heretofore dysfunctional immune system would rouse to action. Molly has Crohn's disease, an autoimmune disorder that causes chronic inflammation of the gastrointestinal (GI) tract and can cause severe pain and physical impairment for some. The worms were

slow in effect. Within hours her forearm surfaced an itchy red rash, but this was the only sign for weeks. Eventually, slowly, she noticed a shift. After a few months, she began to feel more energetic. She was able to get out of bed, to take a walk, to get back to work after years of debilitation and underemployment. She ordered her second dose[1].

Marxist feminists dissect the capitalist formation into the doublet of production and social reproduction. The former refers to a society's conditions of production, its labor power, and the structuring social relations that bring it all together. The latter names the everyday and long-term reproduction of these conditions, often associated with 'unproductive' sites outside the formally 'productive' workplace (Katz, 2001, 2009). In her 2008 book chapter *Value-Added Dogs and Lively Capital*, the critical scholar and crusader against human exceptionalism, Donna Haraway, challenges another Marxist pair—exchange value and use value. While Marx's well-established arguments about human labor, commodity production, and value insightfully explain the cold machinery and alienated labor of industrial capitalism, they are conceptually inadequate to understand what Haraway calls "biocapital" or "lively capital." As much as Marx understood the fleshy vitality of laboring man, he and his disciples have often failed to account for the nonhuman lives and inhuman forces that articulate capitalist relations on anything but anthropocentric grounds. "What happens," Haraway asks, "when the undead but always generative commodity becomes the living, breathing, rights-endowed, doggish bit of property sleeping on my bed?" (45).

In this same spirit, we ask how Marxist feminist approaches to social reproduction do and do not account for the more-than-human. What happens, we ask, when the social reproduction of capital-labor relations becomes the lively, wriggling, legally liminal hookworm burrowed in our intestine? Where do hookworms (or for that matter the immune system or soil) fit within current social reproduction thinking? Haraway bases her argument on the confounding category of ‘working dogs’—neither waged laborer nor passive raw material. How should we conceptualize the *Necator americanus* helminthes in Molly’s gut? Are they working worms? Are they agents of social reproduction? Something else entirely? And so what? What horizons of imaginative and political possibility become available by asking such provocations? To answer these questions, we draw upon historical and contemporary accounts of human-worm ecologies, including personal blogs and commercial literature on helminthic therapy (the use of parasitic worms to treat autoimmune diseases) and historical accounts of an early 20th century hookworm eradication campaign in the United States. To make sense of these examples, we tour and intertwine two literatures that each investigate the relation between life and value but which often remain separate—the social reproduction of “how we live” (Mitchell, Marston, and Katz, 2003) and the reproduction of “life itself” (Cooper, 2008; Rose, 2007). We argue that by incorporating a critical attention to the nonhuman, the biological, and their structuring power relations, scholars of social reproduction can better account for past, present, and future struggles over life’s ongoingness.

Two adult hookworms attached to the intestinal mucosa of their host. Source: The Centers of Disease Control and Prevention.

Lively work

Life’s vitality and forceful materiality both within and beyond capitalism have always been recognized within theories of social reproduction (Meehan and Strauss, 2015; Mitchell, Marston, and Katz, 2003). Yet, empirical studies that center the more-than-human or the biological are rare. We all know that human beings are living, breathing creatures inhabiting a more-than-human world. Don’t we?



Evelyn Nakano Glenn defined social reproduction as “the creation and recreation of people as cultural and social as well as physical human beings...both on a daily basis and intergenerationally” (1992: 1). In a capitalist context, this means the everyday work of creating and recreating workers and their labor power. Nakano Glenn and other feminists (Dalla Costa and James, 1973; Laslett and Brenner, 1989) levied social reproduction as an epistemic intervention into dominant Marxist theories that located value creation (and thus political struggle) exclusively within the labor-capital relation (Fraser, 2014). Marxist feminists pointed instead to other spaces of unremunerated economic value creation like the home (Secombe, 1974). The stereotypically masculine wage earner could not go to work every morning without the stereotypically feminized, unwaged labor of housework. Across our own lives till now, before we sat down to write this sentence, someone raised us, taught us English, grew our food, sang us to sleep, washed our clothes, and inculcated in us (and Will especially) a love for making lists. Some of the people who did this labor were paid. Some were not. Some did this work because of kinship ties; others because of the market, state provision, and/or civil society membership. We did some of this labor ourselves.

This is something of a caricature or oversimplification, but this is one story that social reproduction theory has made it possible to tell. Indeed, in some respects, social reproduction has become *the* story. What bigger story is there than that of “life’s work,” as Mitchell, Marston, and Katz (2003) call it? As both a social ontology and normative ethical framework, social reproduction theory has altered the way we understand economic life. Its value lies in its ability to make visible the disparate, multi-sited reproduction of capitalism as a structuring social formation that exceeds the marketplace or factory (Fraser, 2014). In doing so, it expands our previous assumptions about what constitutes political life. Sites of social reproduction are also sites of contestation, struggle, and negotiation in the reproduction of capitalist exploitation and social inequality.

Yet, we think social reproduction can do more. Despite Nakano Glenn’s acknowledgment of human beings as physical as well as social creatures, the materiality, biology, and more-than-human reality of social reproduction remain under-theorized. Kendra Strauss and Katie Meehan interrogate this exclusion in their recent edited collection (2015). Political economic theory, including social reproduction theory, they argue, has “inherited Cartesian models of materiality, in which matter was unambiguous, unassailable, just ‘there’” (14). Why talk about life’s physical nature? It’s obvious, unaffected, and universally predictable, isn’t it? This way of thinking makes invisible the myriad nonhumans—organic and inorganic, lifeless and lively—that make and remake the conditions of (capitalist) ongoingness (*cf.* Fredericks, 2015; Marks, 2015). We are inspired by Meehan and Strauss’ pathfinding efforts to make visible these nonhuman elements within social reproduction. In order to understand Molly and her hookworms, however, we require a more engaged understanding of the more-than-human, the biological, the human body-ecology specifically, and their significance for life, work, and value.

Elizabeth A. Wilson (2015) shares Meehan, Strauss, and Haraway's critiques of Cartesian thinking. Wilson studies the enteric nervous system—the roughly 500 million neurons that mesh from the esophagus to the anus, fashioning gastrointestinal (GI) function. These viscera, she argues, challenge the Cartesian body-mind binary. Indeed, according to Wilson, despite their longstanding critiques of the Cartesian split, feminists themselves reproduce this binary in their persistent rejection of biology as theoretically taboo. This thinking appears most evidently in feminists' fervent distinction between gender (as social) and sex (as biological). Even in their own attempts to challenge the body/mind hierarchy, the binary reinserts itself. While feminists have continually centered bodily experience, the body in question remains a discursive one—a surface onto which power makes it mark (Brown, 2005; Johnston, 1996). The body's materiality and its messy biology remain other. Just as it continues to inform theories of social reproduction, the Cartesian model of materiality persists here as well—matter as passive substrate, pre-social and predictable. Yet, the body is more. First, the body is biological. This biology is neither mechanic nor simply functional. It is comprised of interlocking complex systems, including the enteric nervous system and the immune system. As such, the biological body is not ontologically singular. What it *is* emerges from the interaction of its partially overlapping biologies. Moreover, it is not automatic and no one biology is sovereignly deterministic. Neither the brain nor the gene reign supreme (Guthman and Mansfield, 2013). Second, this biology is more-than-human. The body emerges through an assemblage of interacting nonhuman, subhuman, and not-quite-human actors, forces, and fields of action. Together, these conceptual interventions—the body as biological and more-than-human assemblage—reimagine the supposedly 'human' subject at the center of social reproduction. Humans are more than simply the agents of production and social reproduction. They are more than just discrete switch points in the transmutation of care into labor power and of matter into value. To understand social reproduction, to understand the politics of this transmutation, we must crack open the human body itself.

Molly and her hookworms provide one such opportunity. Molly's reproduction as a worker (and everything else) is about more than social relations of care or neglect. Hired nurses can cook her meals. Lawmakers can legislate social safety nets. Still, her Crohn's persists. Her debilitation persists. Her biology persists. Yet, this biology is not singular or simply affected. The exact cause of Crohn's disease, as well as many other autoimmune disorders, is not known, though it is thought to emerge from a combination of environmental and genetic factors (CDC, 2017). The complexity of this combination obscures clear etiology (though we expand on one theory below.) Into this complexity come Molly's worms, joining a body-ecology already rife with nonhuman elements. In Molly's case, at least, these critters shift her body-ecology, exciting Molly's immune system into novel configurations. The sociobiological circuits of Molly's reproduction shift. She becomes more physically capable. She gets out of bed. She goes for a walk. Her capacity for expending energy grows; a capacity that when entered into the logics of the market becomes 'labor power.' In other words, Molly's life and labor power are partially produced through her biological becoming with hookworms inside her own messy, more-than-human body.

We all know that human beings are living, breathing creatures inhabiting a more-than-human world. Don't we? The answer is, of course, yes and no. The more important question is *how?* *How* are human beings living, breathing creatures inhabiting a more-than-human world in particular times and places? *How* does matter matter? If the thinkers and doers of social reproduction seek to make more just realities, these are the questions we must answer. The case of Molly and her worms (and helminthic therapy in general) illustrates how such inquiries must attune themselves to the biological and the more-than-human.

Of course, the more-than-human, biological, embodied subject remains as thoroughly social as ever, entrenched in relations of consumption, kinship, and work. Power saturates the social as well as the biological, the molar as well as the molecular.

Biological control

The hygiene hypothesis, also known as the biome depletion theory or lost friend theory, posits that the population-level increase in allergic diseases and autoimmune disorders witnessed in the Global North since industrialization is caused by a relative decrease in exposure to ambient microbes, viruses, and helminthes (Velasquez-Manoff, 2012). The modern hygiene movement of the last 200 years, propelled by large-scale, state-run public works in sanitation, public health, and environmental management, reduced the prevalence of these nonhumans in everyday environments. Because humans had evolved in relation with these critters, it is hypothesized that humans also developed symbiotic immunoregulatory relationships with them. For instance, the presence of relatively benign hookworms in the lower intestine honed the body's immunological response system. With the relatively recent severing of the human-hookworm relationship in much of the Global North, immune systems have nothing to attack and thus nothing to regulate their functioning. Instead, they turn on the body itself, as is the case with Crohn's disease and other autoimmune disorders (Velasquez-Manoff, 2012).

Until the early 1900s, hookworm infections were endemic in the southern United States. As much as 40% of the population was infected, with infections concentrated predominantly in the poor and working classes and in children (Elman et al., 2014). In 1902, parasitologist Charles Stiles concluded not only that hookworms were endemic to the US South but also that hookworm infections may be to blame for the “proverbial laziness of the poorer classes” (Ettling, 1981). High worm burdens can cause iron-deficiency anemia, particularly in undernourished populations. Stiles’ claims received national attention and the disease was christened the “Lazy Cracker Disease” (Elman et al., 2014). Well-to-do Whites were anxious about poorer Whites and their perceived betrayal of racial superiority. Hookworms provided a biological scapegoat (Wray, 2006). In 1909, John D. Rockefeller donated one million dollars to form the Rockefeller Sanitary Commission for the Eradication of Hookworm Disease or RSC (Elman et al., 2014). Active until 1914, the RSC reduced rates of hookworm infection by over 50% (Bleakley, 2007) through a combination of treatment and prevention—severing the human-hookworm ecological relay. Human hosts excrete eggs in their feces, which when mixed with appropriately moist and warm soil hatch into larvae and then burrow into the skin of anyone who comes into contact with that soil. RSC disrupted this cycle through the construction of privies (Elman et al., 2014). The RSC’s self-professed mission at the time was to increase the “labor efficiency and worker productivity” of poor Southern whites (Wray, 2006: 118), effectively managing the biological reproduction of hookworms in an effort to maximize capitalist production and further White supremacy. Poorer Whites were discursively and sociobiologically made into productive workers.



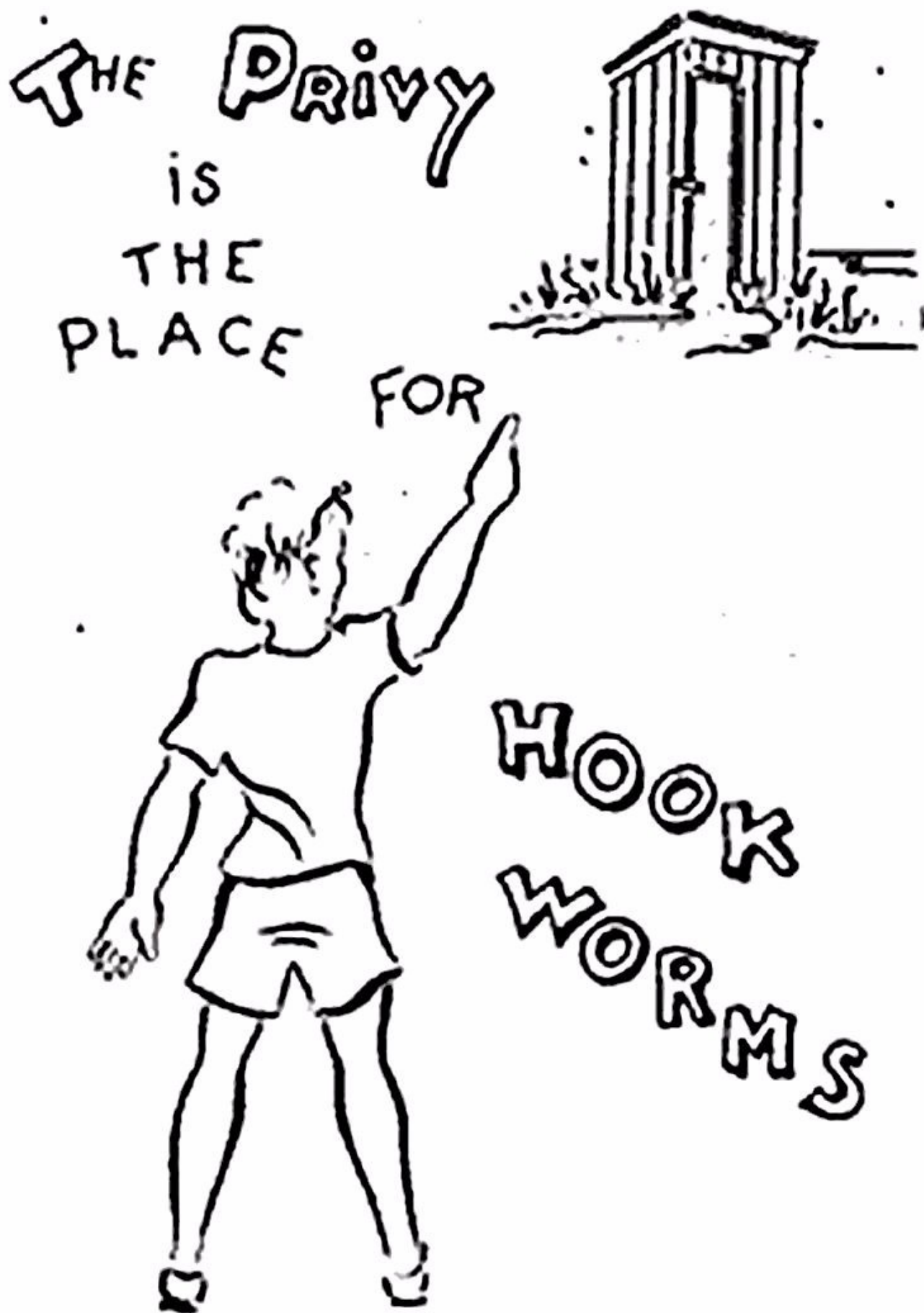
Lewis Hartman digging a privy hole in Mississippi in 1946. Constructing privies was a primary tenant of the hookworm eradication campaigns in the US South. Source: The private collection of Leo Harder via the Creative Commons Attribution Share-Alike 2.5.

This project of ecological rationalization and racial purification sits as the historical counterpart to Molly and her hookworms. Today, instead of limiting their exposure to hookworms, Molly and people like her intentionally reintroduce worms into their bodies in order to improve their bodies' productive capacity (and, in turn, their labor power). While the sale of hookworms as a medical treatment is restricted by the US Food and Drug Administration, the illicit sale of worms via the Internet is alive and well. Hookworms range from \$85 for a single dose of five larvae to a \$2,000 contract for two-year, continuous service. Because hookworms only live for two to five years and cannot reproduce inside their human hosts, helminthic therapy users require regular reinfection with additional worms. Given the lifecycle of hookworms and the cost of the worms, many individuals choose to cultivate subsequent doses from the eggs they excrete following detailed do-it-yourself (DIY) instructions found on online support groups.

These are the socionatures of biocapitalism – the accumulation of capital through the commodification and sale of ‘life itself,’ including vital life processes like blood plasma and lively critters like exotic pets (Barua, 2016; Collard, 2014; Collard and Dempsey, 2013; Franklin, 2007; Holloway et al., 2009; Cooper, 2008; Rajan, 2006). Scholarship on biocapitalism, however, has remained largely divorced from theories of social reproduction scholarship. We intertwine these literatures to rethink reproduction—both its social and biological registers—and to understand the relation between ‘how we live’ and ‘life itself.’ In her critical genealogy of Dolly the cloned sheep, Sarah Franklin (2007) rewrites the presumed relation between biocapitalism and reproduction. Biocapitalism is often fetishized as something novel, emerging with the mid-20th century rise of biotech. During the fanfare surrounding Dolly’s cloning, lead researcher, Ian Wilmut, heralded a new “age of biological control” (Franklin, 2007: 115). Franklin challenges this presentist ideology by tracing biological control through the centuries-long history of sheepherding and breeding. Whereas in industrial societies the exploitation and reproduction of the worker provide the primary means of capital accumulation, in agrarian societies like those of colonial Scotland and Australia other forms of wealth dominate. In the context of livestock breeding, “the goal of commercial profit through the control of reproduction makes of the bloodline a literal conduit of capital accumulation” (78). Biological control, albeit of a different kind from that of genetic cloning, was the key to profit. As breeding became more precise and it became possible to promise a buyer an animal’s exact characteristics and traits, there emerged “a whole new course of value” (Ritvo, 1995: 416) that Franklin terms “breed wealth” (103). For Franklin, breeding highlights the centrality of “elementary modes of reproduction” to all capitalist processes.

In the case of sheep, biological control references the manipulation of the biological conditions of production. Breeding allowed for greater value extraction from the sheep body via sheering, butchering, and further breeding. The ecological relationship between humans and helminthes represents another elementary mode of reproduction and its biological control—at least within the reality claimed by the hygiene hypothesis. In contrast to sheep breeding, however, humans and their hookworms offer different consequences for how we think about the creation and recreation of life and value. First, both Molly and her historical antecedents in the US South confound the conventional political economic categories of labor and nature. In both cases, biological control is being exerted on humans, their nonhuman cohabitants, and the elementary modes of their symbiotic reproduction, with far-reaching implications for social reproduction scholarship. We cannot analytically separate the effects on workers and labor from the effects on the environment and the material means of production. “[T]he relation is the smallest unit of analysis (Haraway, 2003: 20). Earlier we asked how we should conceptualize the *Necator americanus* helminthes (*aka* worms) in Molly’s gut? Are they, as conventional Cartesian thinking would have it, just passive matter, background? Or are they something else? Workers? Or maybe caretakers? Where do they fit in the doublet of production and social reproduction? Ultimately, it is these questions and their categories that do not fit. Rather than workers, we see myriad forms of worm, flows of action and energy both biological and social. Second, since we cannot rely upon deductive categories of labor and nature, we must attend to the parts played by the more-than-human and the biological (and specifically the internal biologies of human bodies) in reproducing capitalist conditions. By studying sociobiological assemblages in their locality and their complexity, scholars can gain insight into the ways that power circulates across all the registers of life’s work from the microbial to the financial. Third, social reproduction scholarship must also attend to the ways biological control looks and manifests differently in different times and places. While human life was biologized at the population level in the modern era of state consolidation, today humans are unevenly but increasingly biologized by the market at individual, molecular scales. Today this market remains an illicit one of DIY collaboration, but research is well under way to capitalize on the human-helminthe symbiosis.

The making and remaking of life and value is not a purely humanist affair. Why should our thinking be? Of course, not every process of social reproduction is necessarily complex, sociobiological, or more-than-human in any politically relevant sense. Marxist feminist frameworks in many cases remain analytically and politically useful. But by suspending theoretical fidelity, at least temporarily, it becomes possible to ask richer questions about the *what*, *where*, *when*, and *how* of life's work. This allows us, more importantly, to ask the political questions of *for whom?* and *to what effects?* As Meehan and Strauss point out, literature on social reproduction rarely intersects conversations on the more-than-human world (2015: 14). Yet, if we understand the biological as deeply social and the more-than-human as deeply political, then we need not perpetuate these dissociations. We can more humbly and creatively engage life in the making.



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This image is taken from an early 20th century public health education campaign targeted at school children in Mississippi. Source: The Mississippi State Board of Health.

Notes

[1] Molly is a composite fictional character. The logistics of helminthic therapy home delivery, as well as the experience of Crohn's disease and its amelioration following self-infection, are based on multiple personal accounts written by helminthic therapy users in online blogs.

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