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COMMENTARY

Gods, Germs, and Petri Dishes: Toward a Nonsecular Medical Anthropology

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ABSTRACT

This commentary calls on medical anthropology to become programmatically non-secular. Despite recent anthropological critiques of secularity, within and outside of anthropology, most contemporary medical anthropologists continue to leave deities and religiosity out of their examinations of healing practices, especially in their accounts of biomedicine. Through a critical, relational constructionist lens, which traces how all entities are both constructed and real, a non-secular medical anthropology would insist that when deities are part of medical practice, they are integral to analysis. Importantly then, within the symmetrical nature of this same constructionist lens, biomedical entities like germs and petri dishes need to be accounted for just as much as deities.

KEYWORDS

Medical anthropological theory; secularity; biomedicine; religion; local biologies; disease/illness

What if in a laboratory you found God? I did. In the early 2000s I was carrying out an ethnographic study of in vitro fertilization laboratories in Quito, Ecuador. The labs had all the things I expected—incubators, pipettes, eggs and sperm, and cultivation chemicals, as well as laboratory biologists who coordinated and combined these objects to make embryos in petri dishes (Roberts 2012:166). I did not expect God, but clinical directors and lab biologists alike told me “God was in the laboratory.” I am from the United States, where God usually plays little obvious role in the practice of science and biomedicine. At first, then, I did not take God very seriously. As a full participant in medical anthropology’s default secularity, I thought of God as part of the ‘local color’ overlaying a consistent universe of natural objects. Eventually, however, I came to understand that God was part of the action. Lab biologists included God in the process of assisted reproduction, since “all of nature was thanks to him.”

The biologists within these Ecuadorian in vitro fertilization (IVF) labs did not participate in what Keane called the “moral narrative of modernity” (Keane 2013:159). This narrative, shaped through mainstream Protestantism, involves an ‘ethical demand’ to attribute agency correctly to individual humans, lest one endanger oneself or others by remaining mired in “a host of false beliefs and fetishisms that undermine freedom and human liberation” (Keane 2013:160). Although not focused on biomedicine or science, Keane’s formulation, describing the relationship of agency to individuals in a world filled with autonomous, discrete objects, is relevant for understanding their practice. Thus the labs with which I was familiar in North America and Western Europe were secular, in the sense that biologists, lab equipment, and gametes (eggs, sperm, and embryos) tended to be experienced as autonomous and independent of each other. Of these entities, only the biologists had the agency of subjects. The rest were objects.

The laboratory biologists I met in Ecuador were not autonomous actors with the power to separate and coordinate elements of nature. They were particular kinds of Catholics, participating in a specific form of religiosity, and they lived in relationship with petri dishes, chemicals, IVF patients, and God. We might understand these biologists and their laboratories as nonsecular. Whereas secularity involves making claims for nature or politics as independent of religion, in these Ecuadorian labs, the petri

dishes, gametes, God, and the biologists themselves were part of a specific material reality produced through their complex interrelationships. They were not defined or constituted by their autonomy.

Bruno Latour (2010) has traced how the modern insistence on autonomy makes science and religion into distinct domains. If humans exist independently from the material world and nature, and nature exists independently from humans, God does not exist, except through belief, because the existence of God cannot be established autonomously. When the Enlightenment God became a spiritual being ‘out there,’ dependent on belief, religious mediators, like icons and fetishes, became false symbols. With God crossed out of active participation in the material world, only autonomous humans had the agency to manipulate the autonomous, inert objects of nature (Latour 2010).

Latour argued that when looked at through the lens of practice, however, science and religion are not opposite modes of thought, nor do they involve different mental competencies, that is, knowledge versus belief. Instead, both make reality through mediators, things crafted through relationships. Scientific mediators, such as microscopes, air pumps, and graphs, are ‘indirect’ and ‘artificial’ means of making the tiny or the faraway and the counterintuitive, like germs or quarks, into an objectively seeable, knowable reality (Latour 2010:114). Similarly, religious images or mediators have the ability to bring deities close by transforming those who experience them. Latour demonstrated that it takes as much work and mediation to experience and be transformed by a germ or a quark as to experience and be transformed by God, and that germs and quarks are as dependent on relationships for their existence as God is. Both germs and gods then are constructed. They are not socially constructed, which maintains the division between ideational and the ‘real’ material world.

While Latour gave us a practice-based sense of how the reality of both God and science work through mediation, he does not emphasize the material transformations, that is, the political and economic conditions that enable these different mediations to make reality. He distinguishes between longer and shorter networks of actors but he does not dwell, for example, on the conditions that make it more difficult for longer scientific networks to exist in Ecuador than in France. But in tracing the construction of the secular, scientific world it is essential to understand the conditions, especially the colonial resource extraction that produced vast material changes worldwide, at every scale. Colonialism and capitalism helped build secular laboratories in certain places through what I think of as complex ‘infrastructures of individualism’—the unseen endoskeleton of support by which some first-worlders became actors who could control objects without the assistance of other people or of God (Roberts 2014). For these few, this reality was robust enough to be experienced as universal.

We can see this individualism at work in the life sciences in the late nineteenth and early twentieth century, where, as Evelyn Fox Keller argued, the germ line, like genes later on, formed the basis for a “particulate theory of inheritance” (2010:11). This theory involves inviolable, individual entities (both germs and people), unshaped by context, able to move freely in the world. The conditions that produced these germs also fostered secularity. In other words, the conditions that produced germs as autonomous objects in the world also produced the ability to perceive separations between humans and God and between God and the world. Within this ‘autonomous existence,’ subjects and objects, minds and bodies, narratives and materialities, nature and culture and gods, and diseases could exist separately (Canguilhem 1992; Daston 1992).

My formulation of ‘autonomous existence’ is shaped by, but also troubles, Latour’s productive provocation that “we have never been modern” (1993) by suggesting that autonomy is not only a *story* that moderns told themselves to hide their entanglement with the world but also was, and is, based in a material reality. Autonomy is not a universal reality, as moderns claimed, but it is a reality nevertheless—just as constructed, contingent, and historical as a germ or God. Put another way, the claim that “we have never been modern” undermines Latour’s later arguments about science and religion as similar practices and the call to attend to the constructed reality of germs and gods. If we have never been modern, then they have never had gods. If a modern reality is contingent and constructed, but still a reality, one that involves an experience of the world as filled with autonomous things, then ‘we’ are indeed modern. This is why so many people experience themselves as failed moderns: for most, it is impossible to experience autonomous existence. But, to reiterate, it has been

possible for a very few to experience the autonomous existence of modernity (through the accumulation of a mass of resources).

There are some indications that this powerful configuration of autonomous existence is now on the wane. This waning is important for medical anthropology in regards to how we understand human's place in shaping the world's biota, an issue in which I will focus on next. At this point however, I want to point to how the waning of autonomous existence invites medical anthropologists to become nonsecular. A nonsecular anthropology would not take secularity at its word, or configure it as only a narrative, but would trace the material reality of both secular and nonsecular sites and ask how gods, God, and godlessness are made. A nonsecular medical anthropologist would ask how everything comes to be—petri dishes or x-rays or cancer or individuals or gods—not to doubt these things in order to prove their existence (as Descartes stipulated) but to trace the contingent relationships that make them.

In Ecuador, a nonsecular approach meant that when I found petri dishes and God in labs, God stayed center stage, and the petri dish required as much explanation as God did. This approach enabled me to argue that petri dishes and God were *both* real and *both* constructed. Three resources helped me make that formulation: (1) the critical medical anthropology of biomedicine in conversation with science technology studies (CMA+STS), which insists on nonuniversalist, constructed, interrelated, material realities; (2) anthropologists and other social theorists, part of the 'postsecular turn,' who have theorized religion and secularity in modernity and helped transform belief, autonomy, individuality, religion, ritual, and secularity into analytic categories that cannot be taken for granted; and (3) almost everyone I met in Ecuador, who already lived many of the insights of these two groups of scholars.

In mapping out a nonsecular medical anthropology, it becomes apparent that scholars of CMA+STS and of religion and secularism have much to contribute to each other's accounts of the world. With its focus on the materiality of the constructed world, CMA+STS could provide an account of the political-economic circumstances that produced the conditions for secularity. With its focus on how humans have nearly always been "coeval with gods and spirits" (Chakrabarty 2000:16), the anthropology of religion and secularity could push CMA+STS toward a nonsecular medical anthropology that includes deities in the understanding of what produces science and biomedicine.

To a degree, Deborah Gordon anticipated a nonsecular medical anthropology in her prescient and powerful 1988 critique "Tenacious Assumptions in Western Medicine," where, following the philosopher Charles Taylor, she described the "mutual support between bio-medicine and individualism" that allowed for claims of an autonomous God by recasting affliction and misfortune as subject to mechanistic laws that can be made into autonomous variables (1988:23). Gordon was careful to note that the 'assumptions' of her title were not solely cognitive or narrative or part of a belief system. Instead, she argued, these assumptions about a nature separate from God were embedded in being and feeling in the world, an embodiment.

While Gordon's argument as a critical medical anthropologist is very similar to those of scholars who have traced the configuration of the secular (Asad 2003; Keane 2006), there has been little conversation between them delineating how individualism and separation from God created modern society, law, ethics, and politics, as well as disease and nature, and the ability to divide the worlds into narrative and reality. Few attempts have been made to parse the ways people came to possess a bounded interiority that could accommodate both germs and belief in God. The thinness of this conversation may be partly due to the very nature of *nature* in Europe and the United States, which came to be experienced as more independent of human activity than law, politics, or religion.

Even without a focus on disease, bodies, or nature, the delineation of the secular has been immensely productive in parsing the insistence on the autonomy of entities. Like Gordon, Webb Keane (also invoking Charles Taylor) called for shifting attention away from discourse and toward practices, and a material focus that he parsed as the "treatment of money, changes in speech pragmatics, disciplines of sincerity," which "reveal more about how large conceptual problems enter into everyday life than do theoretical texts or utopian models. ... It is through such concrete activities that both ontological and moral systems become inhabitable" (2013:166).

Materiality gives way to fantasy, however, when Keane, like Latour, claimed that the moral narrative of modernity runs through the long history of Euro-American efforts "to escape some of

the implications of the ways that humans are embedded in social and material worlds” (2013:166). But could we take this call to materiality further by analyzing the moral narrative not as escape but as a lived reality, albeit for a very few? The problem with ‘escape’ is that it does similar work as ‘the social construction of reality,’ which involves a separation between socialized perception and the material world. If we think through the construction of reality in place of an escape from reality or the social construction of reality, we might focus instead on why there were, and are, some humans whose reality was formed through the massive accumulation of resources that produced autonomous existence. What if we traced the material conditions—the vast, unseen network of interdependent processes—that stabilized both things and individuals as autonomous? These individuals could live as agents who could influence the world of autonomous things, without those things affecting them. We could also examine how their capacity to separate narrative and materiality has had very real consequences for those who do not live in such a reality.

This is not to say that scientists are not embedded in the particular social and material worlds that produced them, as the past decades of feminist science technology studies have argued (Haraway 1991; Knorr-Cetina and Mulkay 1983). However, dismissing the ability to make these separations as only story (as in the assertion that we have never been modern) or ‘escape’ does a grave disservice to the very tools of our analysis and to our commitment to take varied realities seriously, be they secular or infused with deities. Accusations of escape prevent us from carefully documenting the reality of specific worlds and the conditions through which they were made. Just as a germ is real and constructed, the ability of modern bioscientists to maintain separation from germs (at least for a time), is both real and constructed, just like the ability of modern people to make God ‘only’ a belief. Instead of focusing on escape, we could examine the conditions that allow for the distinction between materiality and discourse. By tracing contingent reality, we can pay more attention to how modernity has enabled the creation of both a particular type of disease and a particular type of God.

While a combination of these endeavors could contribute to delineating the rise of autonomous existence, our current interest in tracing the entanglement of everything with everything might signal the reality of its dissipation. As several medical anthropologists and STS scholars have begun to note, reality in Europe and North America is being transformed because the scaffolding that produced autonomous individuals within autonomous existence is collapsing. Kim Fortun (2012) described the need for ethnography that explicitly loops in on itself, a process that mirrors how the degraded infrastructure and exhausted paradigms of the postindustrial present loop into bodies and ecosystems. Likewise, Hannah Landecker (2015) wrote about how widespread antibiotic use, produced through a material reality of individually applied therapies, has literally resulted in new bacteria, a new biology of mass antibiotic resistance that renders it nearly impossible to maintain a sense of individual microbes or people. If we are to take historical material difference seriously, we do not need to argue that the large-scale use of antibiotics was based on a faulty logic or an escape narrative but should instead pay attention to a reality where, for a time, a very few of the world’s inhabitants lived an autonomous existence as individuals who could control nature and excise gods.

Acknowledging the reality of autonomous existence prevents us from congratulating ourselves on a new-found ability ‘to see’ what was ‘there all along’—which would be, yet again, a story of discourse evolving to match a material reality. Insisting on the reality of a separable nature within autonomous existence allows us to track how its reality produced a new planetary biota through such processes as global warming, large-scale antibiotic resistance, and endocrine disruption. New material realities are more than discourse or narrative, or discourse matching a reality that was always there. For better or for worse, the entanglement of everything with everything (including God) is becoming more real for those who have enjoyed the benefits of autonomous existence within modernity.

This brings me to the third resource I described. The people I met while carrying out my research on IVF in Ecuador never shared in this reality of autonomous existence. The world they lived in was unstable, characterized by chronic and sometimes catastrophic inflation shaped by oil boom-and-bust cycles as well as dollarization; debt crisis and bank failures; contracting public services; corruption scandals; indigenous uprisings; and constant strikes by public servants such as teachers,

health care workers, and the police. They lived in a reality where infrastructures were obvious because they did not work as intended or were visibly falling apart. In this reality, separations between individuals and others or between modern entities like ‘law’ and ‘society’ did not exist. Autonomous existence was difficult if not impossible to achieve, and not necessarily desirable. Most people I encountered in Ecuador, no matter how vast their access to material resources, experienced life as precarious and erratic and thus called on as much assistance as they could muster, be it from relatives, money, or God. They led an ‘assisted existence’ (Roberts 2013).

Using insights from CMA+STS, the anthropology of religion and secularism and Ecuadorian daily life, I was able to characterize Ecuadorian IVF labs without making an a priori distinction between Ecuadorian culture, which included a traditional belief in God, and the nature of IVF. Eventually, this formulation also helped me make a stronger argument about reality, not only in Ecuadorian IVF labs, where it is easy to see how things are constructed, but also in the archetypal secular labs of North America and Europe, where the autonomy of people and things was much easier to achieve. I was able to notice that the differences between North American and Ecuadorian IVF labs was not based only on culture, discourse, ideal, or narrative, but also in material realities: in one case it was possible to establish autonomy, and in the other it was essential to establish dependence.

Medical anthropology and autonomous existence

While most current anthropologists of biomedicine pay little attention to God, this was not always the case. Medical anthropology was originally a means to study the nonbiomedical health systems of others, a discipline in which the autonomy of biomedicine and health systems required no explanation (Worsley 1982). Analyzing healing practices among those who did not possess biomedicine, or those ‘imperfectly’ aligned with its embrace, medical anthropologists deployed the anthropology of religion, especially with regard to belief, ritual, and the efficacy of symbols (Evans-Pritchard 1937; Geertz 1973; Lévi-Strauss 1983; Turner 1969). Medical anthropology was based on the view that, while ‘we,’ as active agents, treated separate organic disease entities technically with medicine, ‘they’ treated illnesses culturally or holistically, often through dependent beliefs in gods or spirits.

When medical anthropologists did turn their attention to biomedicine, it was often to demonstrate that the underside of biomedicine was as irrational and fantastical as other health systems—for instance, demonstrating that surgery was part ritual—without interrogating the accusation of irrationality itself (Katz 1981). This approach maintained the autonomy of nature, leaving traditional medicine mired in the realm of belief. We have moved away from this type of critique, but arguably most medical anthropologists of biomedicine tend to keep gods or spirits on the sidelines of biomedical action. There have been some excellent accounts of biomedicine that do include God, such as Deborah Gordon’s article, described, and Libbet Crandon-Malamud’s work (1991) on how competing forms of religiosity and biomedicine produced access to material resources in highland Bolivia. More recently, there has been a renewed interest in examining the relationship of religiosity and biomedicine, evident in this special issue and in recent work by Sherine Hamdy (2012) and Pamela Klassen (2011). The CMA+STS default, however, is still to leave deities to the side, preserving nature’s autonomy and our own. It is as if the more scope we allow for materiality, the less we can allow for God.

Two key concepts in medical anthropology demonstrate its assumed secularity: (1) the now-denounced ‘disease/illness’ distinction, and (2) the concept of ‘local biologies,’ recently taken up with a new vigor, which could become even more powerful if it became programmatically non-secular.

Disease/illness

The disease/illness distinction, one of the codifying contributions of medical anthropology, was based on the same foundational material reality of autonomous existence that made possible distinctions between subject and object, nature and culture, and rationality and belief (Scheper-Hughes 1990). Disease/illness provided a clear role for anthropology in relation to medicine.

Biomedicine's object was disease; medical anthropology's domain was illness (Singer 1990). The distinction presupposed a real object world of organic and universal disease that could be isolated, studied, and managed scientifically by biomedical practitioners (Kleinman 1973). This object world had a hard reality and was separable from the world of illness, which involved varying cultural perspectives and beliefs about those objects. The disease/illness distinction came with assumptions about agency and autonomy. While disease pertained to autonomous but nonagentive entities like germs or genes, illness examined the incorrect attribution of agency to God or spirits. In an applied vein, disease/illness served as a way to characterize what was preventing people from following the correct path toward health, namely, separating themselves from disease and allowing themselves agency to combat it.

Almost since medical anthropology first gifted the world with this distinction, medical anthropologists have been trying to take it back.¹ Part of the impetus for this retraction came from the rise of critical political-economic approaches within medical anthropology that argued that the disease/illness distinction did nothing to critique the inequitable distribution of resources inherent in biomedicine itself (Morgan 1987; Singer and Baer 1995). More recently, medical anthropologists have made disease itself a focus of study, positioning it as constructed, not socially constructed (Young 1982). The urgency for the retraction has only increased as the distinction has taken on a life of its own in medical and nursing school curricula. Medical students are now told they should pay attention to illness alongside their primary focus on disease, reinforcing the distinction between a reality and its social construction. And in a more thoroughly gendered division of labor, nursing students are told that their job is to attend to illness while doctors attend to disease (Budd 2010).²

An analysis of the Ecuadorian laboratories that followed the disease/illness distinction might have gone like this. The petri dish in which embryos were cultivated would most likely have been ignored, regarded as inert and stable, its function transparent. No anthropological expertise would have been required to understand the petri dish unless a native informant used it 'incorrectly,' for example by praying over it, thus mistakenly attributing agency to external forces. An anthropologist could interpret such an act as the logical outcome of cultural belief system. The anthropologist might have explained how these cultural beliefs came from a people who experience infertility as punishment from God and who do not understand the various physiological or endocrine causes of infertility. An anthropologist with a political-economic bent might have focused on how the power embedded in biomedicine discounted local experiences of illness. In this view, God and petri dishes would have had different ontological status: one a real object, the other a cultural belief.

Local biologies

Local biologies, a term coined by Margaret Lock (1993), is a key concept in contemporary critical medical anthropology. The concept emphasizes how "biological and social processes are inseparably entangled over time, resulting in human biological difference" (Lock and Nguyen 2010: 90). A 'local biologies' approach includes biological processes and biological data while also understanding them as contingent, part of the looping relationships that condition environments and bodies. Because it focuses on biological processes not as universal but as contingent on specific historical, economic, and political processes, the concept provides a more complex means of understanding bodies in their life worlds than the ahistorical approach of disease/illness.

With its focus on bodily processes, local biologies has a narrower focus than the general constructionism of STS, which could equally apply to geological formations as to bodily conditions like cancer or menopause. Additionally, the *local* of local biology might convey a sense of bodily processes disconnected from larger global processes.³ Despite these limits, local biologies has been taken up within CMA+STS in the past few years as an extremely productive means of tracing the various processes that contribute to making specific human biologies in their life worlds (Brotherton and Nguyen 2013).

For the most part, deities play no part in local-biological accounts. To give a few examples: Dominique Béhague (2002) used local biologies to extremely rich effect in her analysis of C-sections among poor women in Salvador, Brazil. She described how women's strategies to obtain C-sections were developed through a history of marginalization and poverty that limited their access to medical care. She also observed that this same history also produced specific bodily conditions, like malnutrition, that made these women more appropriate candidates for C-sections than the wealthier women who were more likely to receive them. In Béhague's account there is no nature or culture, only practices and bodily conditions shaped through specific historical material conditions. And God has no role either; nor do the religious practices that might have also shaped these women's bodies and strategies for care. Duana Fullwiley (2011) deployed local biologies in her extensive and masterful ethnographic rendition of sickle-cell disease in Senegal, which shows how the complex political and economic landscapes of healthcare in Senegal have been shaped by the economic agendas of Northern industrialized nations. Throughout her account, however, God and Islamic practices are confined to the realm of belief and concept rather considered as part of the local biologies that create sickle cell disease in Senegal. Perhaps one of the most powerful local-biological accounts yet written is by Julie Livingston (2012). In her wrenching book *Improvising Medicine*, she demonstrated how the specific material conditions of life in Botswana make cancer more virulent than in North America. However, while Livingston mentioned Christianity, it remains eclipsed by such factors as the lack of oncology drugs. By including what autonomous existence has excluded—God and an animate nature—local biological accounts like these could further the goals of CMA+STS, which insists on symmetrical accounts of what shapes various realities.

In my local-biological account of IVF in Ecuador, God was essential. In a material reality in which the stability of objects or people could not be taken for granted, it was crucial to cultivate multiple avenues of assistance in life, including the divine. Paying attention to the role of God in people's lives helped me pay attention to the reality of their lives. God did not have to have an independent reality in order to exist or do things, because very little within the reality of Ecuadorian IVF clinics had an independent reality.

Dependencies like these shaped the bodily existence of human beings in Ecuadorian IVF. God was part of the local biology of bumpy bus rides to shrines after embryo implantation. God helped women relax during the IVF process and especially after the embryo implantation, even when things did not go as planned. Sometimes IVF practitioners involved God in the local biology of embryo implantation, including such decisions as how many embryos to transfer. In the reality of the lab biologists, the embryos could not be considered stable or separable from the fertility hormones, the cultivation chemicals or the petri dishes, or the God that helped grow them. It was clear that IVF embryos could not exist without them, or without God. Yet the existence of these medical supplies was contingent and unstable, too: shipments were flown in from far away, they were often held up in customs, and they did not always work the way they were supposed to. The use of fertility hormones was contingent on the bodily processes of women; these processes were also contingent on the women's specific life histories, including nutrition, care, race, and relationships to God. Nothing was autonomous or universal.

Thinking about how God was created through contingent practice allowed me to see how petri dishes are also made through contingent practice. It also allowed me to notice that petri dishes in more cosmopolitan centers might become more contingent as well, although no less real. When IVF was first developed, the petri dish exemplified the autonomy of particulate inheritance. Eggs and sperm were taken from individual women's and men's bodies, placed in a petri dish to form embryos, and then transferred back into a woman's body. Any resulting child was a combination of only these gametes and had nothing to do with the petri dish, which was seen only as a passive external receptacle for the contents.

These days, the relationship between petri dishes, their contents, and the surrounding world is more contingent and fluid (Roberts 2014). For the past 50 years, most petri dishes have been made of disposable plastic, most commonly transparent polystyrene, often containing bisphenol-A. They were assumed to be 'bio-durable,' meaning that the dishes themselves would not affect their biological contents. However, recent findings suggest that the petrochemicals in the petri dishes

interact with cultivation media to affect fertilization, implantation, pregnancy, and even children born through these procedures (Ashourzadeh, Rahimi, and Khalili 2011). There is now a call for attention to the ‘nano-environment’ of the petri dish (Dumé 2012). In other words, the petri dish cannot be separated from its contents.

If petri dishes are no longer inert, and their chemical construction shapes their interaction with the world around them, we might think about how organisms cultivated inside them are shaped in terms of local laboratory biologies (Koch 2011) or by microbiopolitics (Paxson and Helmreich 2014). For instance, we could ask how IVF children born in different specific political, economic, religious, and biological sites might share a specific, contingent bath of both the chemicals and the extra resources it took to make them, a bath different from that experienced by their non-IVF siblings.

In a non-secular local-biological analysis of Ecuadorian IVF labs, petri dishes are as much constructed as God is. Part of the task is to trace how both are made stable through practice (Mol 2002). A focus on practice also reveals how petri dishes in North America might be becoming more like the Ecuadorian petri dishes, in a reality where the stabilization of objects, people, and nature is becoming increasingly difficult. The nonpassivity of petri dishes might also signal a newly dependent, animate, nonsecular nature.

Toward a nonsecular medical anthropology

The concept of local biologies is part of a larger transformation in both the social and the biological sciences. This and other concepts such as actor network theory, enactment, construction, and the ontological turn, as well as evolutionary developmental biology and epigenetics in the postgenomic life sciences, all call into question the experience of germs, genes, and individuals as autonomous and discrete. These transformations may fundamentally reframe theories of how, through, and what we and everything else come to exist. When both petri dishes and people are permeable, when nature is animate and part of us, and we are part of it, our study of their interactions calls for a nonsecular stance.

Social scientists have begun to note the resonances developing between social science and life science approaches (Lock 2013; Meloni 2014), but only a few have noted the material political-economic reality producing this alignment (Fortun 2012; Landecker 2015; Murphy 2011). These few have suggested that these transformations are not a coincidence of intellectual trends, or merely discursive, but are part of the contemporary constitution of reality itself, a consequence of the biopolitical industrial projects within autonomous existence that have deeply altered life processes on this planet. However, with the possible exception of Donna Haraway (1991), their calls for looping do not tend to loop in deities, nor do they reflect the implications of a reanimated nature. Postsecular scholarship can help, not by harking back to an enchanted nature or recreating the Great Chain of Being, or even Gaia, but in noticing that views about the inertness and separation of nature were based on a reality of autonomous existence that no longer holds.

So what would a nonsecular medical anthropology be? First, it would rest on contingency and dependency. It would not assume that deities are everywhere, or everywhere the same. The anthropology of religion has taught us that while humans tend to be coeval with deities, there have been only a few (albeit powerful) examples of universal and autonomous claims made on their behalf. Second, it would pay attention to what deities do and how they are often part of the looping conditions integral to specific bodies’ lives and practices. It would not cordon off the study of practices and relationships with deities from ontological analysis of medical practice or healing. Third, it would carefully attend to claims of agency and separation, and the sources of those claims. It might not make God an independent agent, but it would not assume the independence of people, petri dishes, and diseases, either. Fourth, it would attend to the material realities, the political economies, that produce certain kinds of deities in certain places and times. It would insist that these circumstances are seen as a reality—not a discourse, not a social construction—because the very possibility of discursive arguments comes from the

reality of autonomous existence. These four approaches would allow us to examine the realities of specific petri dishes, specific Gods, specific people, and specific germs in relation to each other and not only in relation to themselves.

Notes

1. Even Arthur Kleinman (2013), who popularized the distinction, has recently written with regret about its uptake.
2. Several critical theorists of medicine have noted the prominence of the disease/illness distinction as part of medical school's cultural-competency curriculum and in response have developed a model of "structural competency," which involves knowledge of the material and structural conditions that shape patients' lives and illnesses (Metzl and Hansen 2014).
3. Recently Lock has suggested the phrase *situated biologies* as a replacement for *local biologies* to avoid the narrow focus that "the local" can produce (Lock and Pálsson, 2016).

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References

- Asad, T.
2003 Formations of the Secular: Christianity, Islam, Modernity. Stanford, CA: Stanford University Press.
- Ashourzadeh, S., A. Agha- Rahimi, and M. Khalili
2011 Quality control of disposable object in art laboratories performing human sperm motility assays. *Journal of Reproductive Infertility* 12(2):101–108.
- Béhague, D.
2002 Beyond the simple economics of cesarean section birthing: Women's resistance to social inequality. *Culture, Medicine and Psychiatry* 26(4):473–507.
- Brotherton, S. and V. Ngyuen
2013 Beyond the body proper: Global politics/local biology. *Medical Anthropology* 32(4) Special issues.
- Budd, J.
2010 The Difference Between Illness and Disease: A Key Concept for Student Nurses. *In* Yahoo Voices: Yahoo Contributor Network. Retrieved from <http://bogbit.com/the-difference-between-illness-and-disease-a-key-concept-for-student-nurses/>.
- Canguilhem, G.
1992 Machine and organism. *In* *Incorporations*; 6. J. Crary and S. Kwinter, eds. Pp. 633. New York, Cambridge, MA: Zone.
- Chakrabarty, D.
2000 Provincializing Europe: Postcolonial Thought and Historical Difference. Princeton, NJ: Princeton University Press.
- Crandon-Malamud, L.
1991 From the Fat of Our Souls: Social Change, Political Process, and Medical Pluralism in Bolivia. Berkeley: University of California Press.
- Daston, L.
1992 Objectivity and the escape from perspective. *In* *The Science Studies Reader*. M. Biagioli, ed. Pp. 597–618. New York: Routledge.

Dumé, B.

- 2012 Nanodiamond coating for a better Petri dish. Nanotechweb. Retrieved from <http://nanotechweb.org/cws/article/tech/51139>

Evans-Pritchard, E. E.

- 1937 *Witchcraft, Oracles and Magic Among the Azande*. Oxford, UK: The Clarendon Press.

Fortun, K.

- 2012 Ethnography in late industrialism. *Cultural Anthropology* 27(3):446–464.

Fullwiley, D.

- 2011 *The Enculturated Gene: Sickle-Cell Health Politics and Biological Difference in West Africa*, Princeton, NJ: Princeton University Press.

Geertz, C.

- 1973 *The Interpretation of Cultures*. New York: Basic Books.

Gordon, D.

- 1988 Tenacious assumptions in western medicine. In *Biomedicine Examined: Culture, Illness, and Healing*. M. M. Lock and D. R. Gordon, eds. Pp. 19–56. Dordrecht, The Netherlands, Boston: Kluwer Academic Publishers.

Hamdy, S.

- 2012 *Our Bodies Belong To God*. Berkeley: University of California.

Haraway, D.

- 1991 *Simians, Cyborgs and Women: The Reinvention of Nature*. London: Free Association.

Katz, P.

- 1981 Ritual in the operating room. *Ethnology* 20(4):335–350.

Keane, W.

- 2006 Anxious transcendence. In *The Anthropology of Christianity*. F. Cannell, ed. Pp. 308–324. Durham, NC: Duke University Press.

———.

- 2013 Secularism as a moral narrative of Modernity. *Transit: Europäische Revue* 43:159–170.

Keller, E.

- 2010 *The Mirage of a Space Between Nature and Nurture*. Durham, NC: Duke University Press.

Klassen, P.

- 2011 *Spirits of Protestantism: Medicine, Healing and Liberal Christianity*. Berkeley: University of California.

Kleinman, A.

- 1973 Medicine's symbolic reality: On a central problem in the philosophy of medicine. *Inquiry* 16(2):206–213.

———.

- 2013 From illness as culture to caregiving as moral experience. *New England Journal of Medicine* 368:1376–1377.

Knorr-Cetina, K. and M. J. Mulkey

- 1983 *Science Observed: Perspectives on the Social Study of Science*. London, Beverly Hills, CA: Sage Publications.

Koch, E.

- 2011 Local microbiologies of tuberculosis: Insights from the Republic of Georgia. *Medical Anthropology* 30(1):81–101.

Landecker, H.

- 2015 Antibiotic resistance and the biology of history. *Body & Society*. <http://bod.sagepub.com/content/early/2015/03/25/1357034X14561341.abstract>.

Latour, B.

- 1993 *We Have Never Been Modern*. New York: Harvester Wheatsheaf.

———.

- 2010 *On the Modern Cult of the Factish Gods*. Durham, NC: Duke University Press.

Lévi-Strauss, C.

- 1983 *Structural Anthropology*. Chicago: University of Chicago Press.

Livingston, J.

- 2012 *Improvising Medicine: An African Oncology Ward in an Emerging Cancer Epidemic*. Durham, NC: Duke University Press.

Lock, M.

- 1993 *Encounters with Aging: Mythologies of Menopause in Japan and North America*. Berkeley: University of California Press.

———.

- 2013 The epigenome and nature/nurture reunification: A challenge for anthropology. *Medical Anthropology* 32:291–308.

Lock, M. and V. Nguyen

- 2010 *An Anthropology of Biomedicine*. Oxford, UK: Wiley-Blackwell.

- Lock, M. and G. Pálsson
2016 *Can Science Resolve the Nature/Nurture Debate?* London: Polity Press.
- Meloni, M.
2014 How biology became social, and what it means for social theory. *The Sociological Review* 62(3):593–614.
- Metzl, J. and H. Hansen
2014 Structural Competency: Theorizing a new medical engagement with stigma and inequality. *Social Science & Medicine* 103:126–133.
- Mol, A.
2002 *The body multiple: Ontology in medical practice.* Durham, NC: Duke University Press.
- Morgan, L.
1987 Dependency theory in the political economy of health: An anthropological critique. *Medical Anthropology Quarterly* 1(2):131–154.
- Murphy, M.
2011 Distributed reproduction. *In Corpus: An Interdisciplinary Reader on Bodies and Knowledge.* M. J. Casper and P. Currah, eds. Pp. 21–39. New York: Palgrave Macmillan.
- Paxson, H. and S. Helmreich
2014 The perils and promises of microbial abundance: Novel natures and model ecosystems, from artisanal cheese to alien seas. *Social Studies of Science* 44(2):165–193.
- Roberts, E. F. S.
2012 *God's Laboratory: Assisted Reproduction in the Andes.* Berkeley: University of California Press.
- 2013 Assisted existence: An ethnography of being in Ecuador. *Journal of the Royal Anthropological Institute* 19(3):562–580.
- 2014 Petri Dish. *In Somatosphere.* Retrieved from <http://somatosphere.net/2014/03/petri-dish.html>
- Scheper-Hughes, N.
1990 Three propositions for critically applied medical anthropology. *Social Science & Medicine* 30(2):189–197.
- Singer, M.
1990 Reinventing medical anthropology: Toward a critical realignment. *Social Science & Medicine* 30(2):179–187.
- Singer, M. and H. Baer
1995 *Critical Medical Anthropology.* Amityville, NY: Baywood Publishing Company.
- Turner, V.
1969 *The Ritual Process: Structure and Anti-Structure.* Chicago, IL: Aldine Publishing Company.
- Worsley, P.
1982 Non-Western medical systems. *Annual Review of Anthropology* 11:315–348.
- Young, A.
1982 The anthropologies of illness and sickness. *Annual Review of Anthropology* 11:257–287.