

Vulnerable from Within: Autoimmunity and Bodily Boundaries

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Abstract: *The vulnerability of bodies raises questions as to how to care for and protect our fragile, sensate flesh. Traditionally, we have focused on shoring up our bodily boundaries, making ourselves as nearly immune to outside harm as we can. The issue of autoimmunity, both medically and politically, problematizes this desire for impermeability: “danger” seems to come from inside as well as out. I argue in this essay that it may be our metaphors of immunity and danger themselves that are problematic. Recent scientific developments in immunology (including controversies around vaccination and the concept of the microbiome) and virology suggest that we might think of our vulnerability in terms other than the militaristic protection of borders. I argue that these changes can help us to rethink harmful approaches medically, interpersonally, politically, and ecologically.*

Keywords: *immunity, autoimmunity, metaphor, microbiome, Catherine Keller.*

Perhaps the most ethically loaded aspect of bodies is their extraordinarily wide-ranging vulnerability. Bodies are vulnerable to direct physical violence, of course, but also to words and discourses, economic deprivation, and environmental degradation. They are vulnerable to disease, which in turn makes them vulnerable to medical practices and discourses, iatrogenic ailments, and, in countries without health care provisions, bankruptcy and a still greater inability to care for themselves. A great deal of self-care is medical in some way; as bodies, we look after our health, whether we call that health mental or physical. Vulnerability calls to us to care, perhaps nowhere so obviously as here.

But what is it to care, besides to have a sort of feeling of concern, or perhaps affection; to be emotionally invested in some outcome? Care as an act seems, at least at first, to call upon us to protect, to surround the body with barriers against possible harms. It even tempts us to try to render bodies invulnerable, impermeable, even though we know better, know that there is too much to value within the vulnerable itself. Protection seems to appeal to our sense of boundary, and to call upon us to reinforce weak barriers between other and self. But those barriers are called into question by recent work in several disciplines. The distinctions between one entity and another turn out to be surprisingly untidy. We want to protect the vulnerable, but if we can't really set them apart from everyone and everything else, and if we aren't simply sealing off bodies, we don't really know how to set about protecting, either. While I cannot lay out a plan for protectiveness—if anything, I hope to blur the distinctions further—I do want to consider carefully the language we use about it. I want to mess with our metaphors, including those of care and protection, of beings and boundaries, of selves and self-care—metaphors by which we understand both the sensations and the actions of our flesh. More particularly, I want to explore the often peculiar metaphors of immunity and autoimmunity, which have undergone dramatic change in recent decades. Not only do these demand that we reconsider medical practice; they also turn out to be curiously intertwined with a much wider ethical sense

of care for what is vulnerable even beyond ourselves. This sounds fairly trivial until we realize how deeply metaphorical our thinking really is—and what the results of some of our metaphors for the protection of and against vulnerability have been, and what effects those have had upon our understandings of care.

I work primarily in philosophical theology, where vulnerability comes up fairly often—Christianity has long been divided on whether to acknowledge that its god is wounded, and just how to feel about that. I was inspired to reflect on the topic again by my recent reading of Catherine Keller’s *Cloud of the Impossible: Negative Theology and Planetary Entanglement*. The book is complex, but there runs through it a line of thought that I can state fairly straightforwardly: that our boundaries are artificial, and dangerously so; that we separate both humanity and divinity from the rest of the animals, the rest of life, the rest of the world, at our peril. In other words, Keller has no big guy god hovering over and moving the chess pieces of the world, but a marvel of a thoroughly interrelated and vital world—a world that is deeply vulnerable.

When the whole world is vulnerable, the wounds cannot come only from without, and the threats will take a wide range of forms. Immediately, many of our models of safety and care are unsettled. Keller remarks upon the “multiple jeopardy” of the vulnerable subjects of liberation,¹ and upon the vulnerability of all flesh, ours and the world’s.² There is a vulnerability particularly pronounced in affection—“the vulnerability of love” or “of hope.”³ In describing all of these, Keller holds to a central emphasis on the *mutuality* of vulnerability. We are vulnerable to one another, though unequally—“the separation of the over-resourced few from the vulnerable rest of us cannot hold,” she writes.⁴ The planet itself is vulnerable, not least to those of us who foolishly imagine ourselves invulnerable to the rest of it.⁵ Even the divine is vulnerable; process theology, particularly, offers us “a contingent and vulnerable deity.”⁶ Keller’s vivid reminders of entanglement, of the multiplicity and mutuality of vulnerability, can help us as we go about changing some of our dominant metaphors.

With this deep mutuality always in mind, let me focus more narrowly on human flesh. Our bodies are vulnerable to all manner of wounding and harm, to damage and to disease. This fact has been prominent recently in arguments over vaccination, where the language of parental rights and the vulnerability of individual children meets that of common good and herd immunity. Parents may misunderstand, and thus overestimate, risks associated with vaccinating; unless one faces an emergency directly (say, a wall of fire, or an knife wielding assailant), doing nothing will almost always feel safer than doing anything. Given the relatively low risk that first-world children have of coming down with many of the diseases against which they can be vaccinated, even a child’s unhappiness and uncomfortableness with an injection may seem grounds enough for avoiding it. Parents can easily ignore the vulnerability of other children, who perhaps cannot be vaccinated effectively, and whose fragility their own children’s vaccination is intended to protect.

The issues around vaccination are so difficult to understand not only because such deep emotions are involved, but because the boundaries of inside and out—my child, whole or invaded by germs; our children, clustered in classrooms—are not nearly so neat as we have thought.

1 Catherine Keller, *Cloud of the Impossible: Negative Theology and Planetary Entanglement* (New York: Columbia University Press, 2014), 32. Also see pages 37, 227, 301.

2 Keller, 53, 207.

3 Keller, 271, 282.

4 Keller, 282.

5 Keller, e.g., 269, 277.

6 Keller, 260.

Consider, first, that immunity itself is not individual. Herd immunity is, as Eula Biss notes in her work on inoculation, an observable phenomenon (indeed, it has been recognized since well before its naming in 1923) that is counterintuitive “only if we think of our bodies as inherently disconnected from other bodies. Which, of course, we do.”⁷ Herd immunity, requiring us to think of collective rather than individual resistance to disease, is essential to the effectiveness of vaccination, which depletes the population available to host a particular virus and carry it to others in the community. Thus it is that “the boundaries between our bodies begin to dissolve, [and]... immunity... is a common trust as much as it is a private account.”⁸ Bodily boundaries become unsettlingly fluid. Vulnerability and danger are redefined; those who are vulnerable—say, to measles—become those who are also dangerous, as hosts. But so are we all, after all, as embodied. To be vulnerable, then, is to share one’s vulnerability. To be protected is to share one’s protection with others.

To say that we are vulnerable is to say that we, like the unvaccinated, are not immune—a conception with a startling range of political, philosophical, and theological applications. Biological theories of immunity, which we might think are basic and foundational of other uses of the term, are already strikingly metaphorical. Sometimes, they are gastronomic: “cells [eat]... pathogens.” At others, they are educational: cells “instruct[] other cells.”⁹ Biosemiotician Thure von Uexküll says that “immunologists use phrases like ‘memory,’ ‘recognition,’ ‘interpretation,’ ‘individuality,’ ‘reading,’ ‘inner picture,’ ‘self,’ [and] ‘nonself...’”¹⁰ Biss notes metaphors ranging “from a symphony to the solar system to a perpetual motion machine to the vigilance of a mother”¹¹—in fact, she remarks, “the cells of the immune system lead lives in which they kiss, are naive, eat, purge, express, get turned on, are instructed, make presentations, mature, and have memories. “They sound like my students,” a friend of hers observes.¹² And it turns out that, just as it matters to those young students if they can *call* someone “my girlfriend,” so too it matters how cellular relations are described.

Keller reminds us, “The other comes before us then in the alterity not of a discrete over-against, not in the bounded exteriority of some flat face to face, but as altering and as altered in the act of relation.”¹³ This is true at every scale, among all othernesses. For some time, though, the dominant metaphor of immunity’s relationality has been hostile: self vs. non-self. In biology, as on the grander scale of politics, we can easily see with what eagerness variously identified “selves” have sought out “others.” The most common description of the immune system’s self/non-self relation has long been military. A system of immunity fights our alteration, recognizes the body’s isolationist desires, and reacts aggressively against what is not-self, to kill it or to contain it within protective boundaries—to imprison it.¹⁴ It is said to “tolerate” self. Against

7 Eula Biss, *On Immunity: An Inoculation* (Minneapolis: Graywolf Press, 2014), Kindle location 244-246. The date for the use of the concept of herd immunity appears at location 1954. (All subsequent references to this text are Kindle location numbers.)

8 Biss, 232-36.

9 Biss, 656-61.

10 Biss, 637-44. Biss notes that the remark was made at a conference on immunosemiotics. This conference occurred in Tuscany in 1986, and the proceedings were published in 1988. Sercarz, E., F. Celada, N. Mitchison, and T. Tada, eds. *The Semiotics of Cellular Communication in the Immune System* (Berlin: Springer Verlag, 1988).

11 Biss, 656-61.

12 Biss, 684-690.

13 Keller, 22.

14 Wilfried Allaerts, “The Biological Function Paradigm Applied to the Immunological Self-Non-Self Discrimination: Critique of Tauber’s Phenomenological Analysis,” in *Journal for General Philosophy of Science*, Vol. 30, No. 1 (1999): 155-171, at 158. Allaerts cites Alfred Tauber: “the Self has emerged in the 20th century as an operative metaphor for orienting immunity in terms of both the source of its activity and the object of its function. (...) The term Self is borrowed from the philosophical discourse to denote concerns about the source of immune activity, that is the identity problem.” Alfred Tauber, *The Immune Self: Theory or Metaphor?* (Cambridge: Cambridge University Press, 1994), 141.

non-self, it guards—or, especially when the body's borders are breached, it wages war. And the non-self is a threat everywhere: think only of the incredible popularity of “detoxifying” regimens for everything from our intestines to our psyches. Fearful of impurity, by the contamination of what is not our own, we clean out ourselves. There is no negative capability here, no endurance at all of the unknown. What is not recognized must be annihilated.

Anthropologist Emily Martin notes, “Popular publications depict the body as the scene of total war between ruthless invaders and determined defenders.”¹⁵ Biss comments on this, “Our understanding of disease as something that we ‘fight’ invites an array of military metaphors for the immune system. ... the body employs some cells as ‘infantry’ and others as the ‘armored unit,’ and these troops deploy ‘mines’ to explode bacteria, while the immune response itself ‘detonates like a bomb.’”¹⁶ With these as the metaphors for protection of the most vulnerable, small wonder we create such disasters, trying to maintain an artificial purity. No bomb detonates altogether cleanly. On such an understanding of immunity, we imagine our bodies as highly individuated and constantly under siege, with germs and toxins sneakily seeking every possible mode of entry.

This is the sense of the immune central to Jacques Derrida's warning in *Faith and Knowledge* that autoimmunity is an inevitable outcome of violent protection, and that it is also at the intersection of politics with religion and science.¹⁷ He has a political version of immunity in mind, in which whatever is meant to protect the state and its people—police, military, even ecclesiastical forces—turns on itself instead. “The perverse effect of the autoimmunitary itself,” Derrida writes, is that “repression in both its psychoanalytical sense and its political sense—whether it be through the police, the military, or the economy—ends up producing, reproducing, and regenerating the very thing it seeks to disarm.”¹⁸ (Though that is how Derrida phrases it, it is more exact in both political and biological terms to say that the protectors turn on those they had claimed to protect, or were instituted to protect.) As much in the cared-for body as in the political state, autoimmunity appears as a particularly puzzling, often frightening, form of vulnerability. It is no longer enough to guard our borders, to protect against attacks from without: in autoimmunity, what “attacks” or “wounds” is the very system that otherwise “defends;” that is, that wards off harm and minimizes bodily vulnerability. (I have used the scare quotes to indicate not only the problematic boundaries of selfhood, but the problematic nature of metaphors of attack.) Like herd immunity, autoimmunity threatens our sense of wholly discrete human bodies, but in a different way: rather than those bodies together forming a sort of communal organism, we now realize that each “individual” body is enormously multiple.

Protection becomes problematic when we realize that not all danger is external—and not simply because, as I've already noted, we cannot always clearly bound our inside from out. The reaction that becomes “autoimmune” arises from the ever-present chance that we will fight against our own, and ignore the barbarian hordes, or deplete our forces' strength before they

15 Emily Martin, *Flexible Bodies: The Role of Immunity in American Culture from the Days of Polio to the Age of AIDS* (Boston: Beacon Press, 1995), 53.

16 Biss, 646-54.

17 Jacques Derrida, “Faith and Knowledge: The Two Sources of ‘Religion’ at the Limits of Reason Alone,” in *Acts of Religion*, ed. Gil Anidjar, (New York: Routledge, 2002), 42-101, at 67 “We are here in a space where all self-protection of the unscathed, of the safe and sound, of the sacred (*heilig*, holy) must protect itself against its own protection, its own police, its own immunity. It is this terrifying but fatal logic of the *auto-immunity of the unscathed* that will always associate Science and Religion.”

18 Jacques Derrida, *Philosophy in a Time of Terror: Dialogues with Jurgen Habermas and Jacques Derrida* (Chicago: University of Chicago Press, 2004), 99.

18 Derrida, Jacques. *Philosophy in a Time of Terror: Dialogues with Jurgen Habermas and Jacques Derrida*, 2004. Chicago: University of Chicago Press: 99.

attack us.¹⁹ The standard language for understanding autoimmunity has been that the self is misrecognized as stranger or other; in fact, defining what is *self* has been crucial to the history of that understanding. Even the hopeful governing style that is democracy, says Derrida, always risks the democratic election of a government that suspends the democratic²⁰ (—a warning recently made uncomfortably prescient. On militaristic metaphors, the autoimmune danger is multiple: we risk attack from within, and because of this, we are ill-defended against attack from without. The body misrecognizes itself as a stranger, and fails to direct its forces to shoring up its barriers.

This metaphor of self attacking itself has been extended in odd ways. One is particularly popular among bloggers, where we find the logic that because the self is attacking itself, there is a clear causal self-hatred. “I believe that this subtle, relentless, uncontained self-hatred is at the root of the autoimmune disease epidemic in women. How else would you personify a body that’s attacking itself as the enemy?” writes Habib Sadeghi, who has helped to popularize this argument through posts, a TED talk, and various publications. He declares, in a text reposted on Gwyneth Paltrow’s popular site “Goop,” “the uncontained self-hatred that gives rise to autoimmune disease needs to be contained with self-love.”²¹ Sarah Wilson, an admirer of Sadeghi’s work, asks “Could female self-hatred be the real cause of autoimmune disease?” and her answer is affirmative.²² Bryan Eden assures blog readers that he cured his ankylosing spondylitis with love for himself.²³ And Anne Merkel tells us that “where an individual’s body is starting to work against itself, often there is a deep feeling of deserving to be hurt or abused – an unworthiness to be healthy.”²⁴

It must seem odd to position this demand for love and care—surely ethical responses to our vulnerability—within the discussion of militaristic metaphors of attack. But in fact the self-care demanded here is perceived as a response to attack: an attack by a self acting badly, a self with weapons that have been mis-directed, with hatred that needs to be put back in its imprisoning container. The demand may be that we fight back with love—but we are responding, nonetheless, to a violent attack: rejecting selfhood, the self has attacked what it really is. And we are *fighting* back, recognizing ourselves properly again as loveable.

The language of self and nonself—self to be tolerated, nonself to be met by aggression (—is first used in immunology in the 1940s.²⁵ (Interestingly, in this it precedes the use of “immune system,” which appears in 1967).²⁶ In 1984, Antonio Coutinho argues that the immune system needs to “know” (in some non-cognitive way) what is “foreign,” while imposing willful ignorance

19 Cf. Keller, 239f.

20 Jacques Derrida, *Rogues: Two Essays on Reason*, trans. Pascale-Anne Brault and Michael Naas (Stanford: Stanford University Press, 2005), 82f.

In an interesting political variation, philosopher Roberto Esposito argues that political immunity protects the individual from the excesses of the demands of community—not us versus them, then, but me versus us. In this case too, the self is both recognized and protected by the immunizing—though Esposito does not regard this positively; in fact, he sees in it a refusal of commonality and the risk of immunization turning upon itself, and he holds out the hope that we can change our biopolitics from its immunitary paradigm. A 2006 special issue of *diacritics* offers two useful summaries: Roberto Esposito, “The Immunization Paradigm,” translated by Timothy Campbell, in *Bios, Immunity, Life: The Thought of Roberto Esposito*, special issue of *diacritics* Vol. 36 No. 2 (Summer 2006): 23-48, and Timothy Campbell, “Bios, Immunity, Life: The Thought of Roberto Esposito,” in *ibid.*: 2–22.

21 Habib Sadeghi, “Emotional Erosion and Uncontained Anger,” in *Goop*, undated, at <http://goop.com/emotional-erosion-anduncontained-anger/>, accessed November 4, 2016.

22 <http://www.sarahwilson.com/2014/11/could-female-self-hatred-be-the-real-cause-of-autoimmune-disease/>, accessed November 5, 2016.

23 <http://kindnessblog.com/2015/01/29/how-i-cured-my-incurable-disease-with-love-by-bryan-eden/>, accessed November 5, 2016.

24 <http://www.thetappingsolution.com/eft-articles/clearing-early-abuse-issues-causing-autoimmune-disorders/>, accessed November 5, 2016.

25 Allaerts, 157f.

26 Biss, location 652, citing Nobel winning biologist Niels Jerne. She does not offer a further reference; Jerne uses the term in a number of different essays and addresses.

of self, so that it will not attract attack.²⁷ In 1994, Alfred Tauber declares that “the Self has emerged in the 20th century as an operative metaphor for orienting immunity in terms of both the source of its activity and the object of its function,”²⁸ suggesting the persistence of the metaphor even when, as we shall shortly note, its terms stop meaning very clearly. Without the sense of self and an opposing stranger or foreignness, the language of attack is hard to motivate. But in fact, among physicians and medical researchers, the militaristic metaphor of immunity has already been supplanted several times.

One of the first changes is a shift from self versus nonself to infectious versus noninfectious, where what matters is the capacity for harm to the organism, rather than the firm maintenance of boundaries. Building on this, Polly Matzinger more recently proposed “the danger model,” suggesting that the immune system responds to *danger* and not primarily to strangeness; when it mis-responds, the problem is not in the immune system itself, but in the signals sent out by the perceived hazard. “[T]he immune system,” she writes, “is more concerned with damage than with foreignness, and is called into action by alarm signals from injured tissues, rather than by the recognition of non-self.”²⁹

This is a start, not automatically responding to every difference as a danger. In both of these variations, though, there remains a fairly clear distinction: that which is to be tolerated versus that which is to be annihilated, whether these sides are identified accurately or not. The body is vulnerable; there are dangers to it, and the immune system does violence to those dangers. Sometimes, it does violence elsewhere than it should have.

We move away from modes of protection in the next step, one that seems to me both unexpected and delightful: the shift toward biosemiotics. Biss recounts a fairly marvelous story:

Three immunologists on a road trip in 1984 became excited about the possibility that the cells of our bodies might, like the humans they compose, use a system of signs and symbols—a kind of language—in their communication with each other. After traveling for seventeen hours in a VW bus with a ripe wheel of Taleggio cheese and an Italian edition of Umberto Eco’s *A Theory of Semiotics*, they determined, through some rough translations performed by the Italian among them, that a better understanding of semiotics, the study of how signs and symbols are used and interpreted, might enhance their work in immunology.³⁰

Alas, as she notes, the immunosemioticians did not get directly to work on theories of metaphor. But they did argue that bodily cells interpret, and they had a conference on the matter in 1986, where immunologist Franco Celada asked, “Does the Human Mind Use a Logic of Signs Developed by Lymphocytes 10 to the 8th Years Ago?,” arguing that our “bodies” may have interpreted long before our “minds.”³¹ There is argument—justified, I think—as to what counts as “interpretation” here. But there is a huge value, too, in blurring the strict dichotomy between spirit and flesh, and in the recognition that metaphor cuts both ways. Changing our semiotics changes our metaphors by drawing attention to the very fact of reading them.

The most recent immunological metaphors take us even beyond these interpretive possibilities. Medical researches are now speculating that we don’t need your war machines, after all. What we need is better gardens, happier inner ecosystems, and immigrant life forms.

27 Antonio Coutinho, L. Forni, D. Holmberg, F. Ivers, and N. Vaz, 1984, 152. Cited in Allaerts, 159.

28 Alfred Tauber, *The Immune Self: Theory or Metaphor?* (Cambridge: Cambridge University Press, 1994), 141. Cited in Allaerts, 158.

29 Polly Matzinger, “The Danger Model: A Renewed Sense of Self,” in *Science*, Vol. 296 No. 5566 (April 2002): 301-305, at 301.

30 Biss, 630-35.

31 Biss, 637-44. Franco Celada, “Does the Human Mind Use a Logic of Signs Developed by Lymphocytes 10 to the 8th Years Ago?” in “The Semiotics of Cellular Communication in the Immune System” (see note 10): 71-79.

The boundaries between persons are not the only ones that we realize are far more fluid and strange than we'd thought. "Each" of us, each permeable being in its veil of skin, is a colony; even a colony of colonies. I have read repeatedly that we are more inhuman than not, meaning that our bodies host astonishing quantities of bacteria and viruses, but the claim seems odd to me;³² rather, it seems that what it is to be human is to be multiple in this way. Perhaps the insistence on the inhumanity of our bacterial bodies is a trace of the ancient fear that Keller calls "ecophobia," a fear of human inseparability from the nonhuman universe,³³ a fear "carrying an ethos of conquest, control, commodification."³⁴

But we could try, just for a bit, to be less fearful. Perhaps we might fearlessly think that we are symbiotes; that we *as human* are far more multiple than we thought, collectives within collectives. There are two important lines of contemporary scientific research suggesting some value to this way of thinking.

The first comes from research in paleovirology, research on ancient viruses, which indicates that our collective bodies are colonies that that have been *joined*, not just within one organism's lifetime, but throughout our evolutionary history. Scientists have been aware for a couple of decades that there are elements *in the human genome* from the DNA sequences of retroviruses that were originally sources of infection. Quite recently, researchers at Stanford "identified several noncoding RNA molecules of viral origins that are necessary for a fertilized human egg to acquire the ability in early development to become all the cells and tissues of the body," following a Stanford study earlier in the year "showing that early human embryos are packed full of what appear to be viral particles arising from similar left-behind genetic material." That is, "human embryos *need* ancient viral RNA, trapped in the non-protein-coding regions of our genomes, to grow. They are essential for our existence."³⁵

What is the point of this claim about ancient viruses hanging out in human genetic material? "We're starting to accumulate evidence that these viral sequences, which originally may have threatened the survival of our species, were co-opted by our genomes for their own benefit," [says] Vittorio Sebastiano, an assistant professor of obstetrics and gynecology. "In this manner, they may even have contributed species-specific characteristics and fundamental cell processes, even in humans."³⁶ Our vulnerability, in other words—the fact that we can be diseased, that viruses enter into the ill-guarded colonies of ourselves—has *made us*. A "threat" became us, and we changed, and not for the worse. Our bodies are as they are by not always having been and not always being recognizably our own.

It is not only within what we think of as human genetic material that we find this

32 Even in arguing that the number of bacteria is not so overwhelming as we once thought, the distinction tends to remain. Consider as an example this abstract for "Revised Estimates for the Number of Human and Bacteria Cells in the Body." "Reported values in the literature on the number of cells in the body differ by orders of magnitude and are very seldom supported by any measurements or calculations. Here, we integrate the most up-to-date information on the number of human and bacterial cells in the body. We estimate the total number of bacteria in the 70 kg "reference man" to be $3.8 \cdot 10^{13}$. For human cells, we identify the dominant role of the hematopoietic lineage to the total count ($\approx 90\%$) and revise past estimates to $3.0 \cdot 10^{13}$ human cells. Our analysis also updates the widely-cited 10:1 ratio, showing that the number of bacteria in the body is actually of the same order as the number of human cells, and their total mass is about 0.2 kg." Sender, Ron, Shai Fuchs, and Ron Milo. "Revised Estimates for the Number of Human and Bacteria Cells in the Body," in *PLoS Biology* (August 19, 2016), <http://journals.plos.org/plosbiology/article?id=10.1371/journal.pbio.1002533>, accessed November 5, 2016.

33 Keller, 268.

34 Keller, 276.

35 Cynthia Fox, "Symbiosis with Ancient Viruses Critical for Human Development," in *Bioscience* (December 3, 2015), Fox <http://www.biosciencetechnology.com/news/2015/12/symbiosis-ancient-viruses-critical-human-development>, accessed November 5, 2016. My italics. Fox also notes (ibid.), "In recent years humans have come to understand we are not just about Darwinian natural selection, but symbiosis. For two billion years, there were only bacteria and archaea. Then a single archaea swallowed a bacteria in such a way the bacteria became its powerpack. Complex life exploded out of this symbiosis. Remnants of that moment are alive in humans today: experimental and genetic analysis proves the power packs of our cells, mitochondria, are indeed ancestors of those ancient bacteria."

36 In Fox.

madmultiplicity, but also within the current colonies of us, beyond our germ cells. As I noted above, we are made of all manner of curious little beings. And it turns out, in the second important development, that immunity may be a matter not so much of killing off as of living further—cultivating not warriors, but tiny horticulturists and abundant flora, well managed gardens that form ecosystems layered one within the other.

The shifting sum of the bacteria, viruses, and fungi that are also us is called the microbiome, a term “proposed a decade ago by Nobel laureate Joshua Lederberg,” which “identifies the totality of microbes..., their genomes..., and environmental interactions in a defined community or biological niche.”³⁷ And so, says a *New York Times* article titled “Tending the Body’s Microbial Garden,” “Rather than conducting indiscriminate slaughter, ... scientists [at the National Human Genome Research Institute] want to be microbial wildlife managers.”³⁸ As in other ecosystems, some elements must be nurtured to prevent radical, even fatal systemic imbalances. Gratifyingly for our metaphors, this approach has shown promise not only in responses to “invasive” bacteria, but to obesity, antibiotic induced ailments such as those caused by *Clostridium difficile* (treatable by the slightly infamous fecal transplant), and perhaps even disorders such as Type 1 diabetes and rheumatoid arthritis—precisely those autoimmunities so central to the Derridean analysis.³⁹ In fact, some researchers hypothesize, “Autoimmune diseases are more likely passed in families because of the inheritance of a familial microbiome, rather than Mendelian inheritance of genetic abnormalities.”⁴⁰

So at least three developments in our understanding require us to rethink the influential metaphor of autoimmunity as something other than an error in the identification of a protected, neatly bounded, self. The need for vaccination reminds us that immunity belongs to groups of human bodies; paleovirology reveals that an embodied human “self” can only be because what became human was long ago successfully “invaded;” and the emerging view of the microbiome keeps us from thinking of “a” body as if it were singular, a thing to be kept pure in its isolation. With the changes in the metaphors of immunity, we must also rethink the inevitability of the autoimmune as a misguided attack: if we shore up our “selves” with the cultivation of multiplicity, our relationality, even our vulnerability, becomes another strength.

All of this must remind us, to cite Keller once more, that “the boundary between inside and out is never more than an abstraction imposed—whether for care, for convenience, or for conquest.”⁴¹ Rather than thinking the body, personal or politic, in terms of repression and tolerance, guarding and attack, we may remind ourselves that protection of the vulnerable is protection of us all: tending to the microbial, not by blocking out but by building up, we cultivate life. There are no fully closed systems. A military force always prone to mutiny and self-destruction might be rethought both as a semiotic error—as misreading of a sign that was not danger, after all—and as a need for ecological cultivation. We might do well to hammer our microbial swords (and the big bombs of our immune systems) into miniscule plowshares. This is not to argue that Derrida is wrong in his implications—that what seeks violently to eradicate violence will turn against rather than protecting—but it is to suggest that we shift metaphors,

37 Jose U. Scher and Steven B. Abramson, “The Microbiome: A voyage to (our inner) Lilliput,” in *The Rheumatologist*, November 2011, unpaginated. At http://www.the-rheumatologist.org/details/article/1386089/The_Microbiome.html, accessed November 5, 2016. See also Amy G. Proal, Paul J. Albert, and Trevor G. Marshall, “The human microbiome and autoimmunity,” in *Current Opinion in Rheumatology* 25:2 (March 2013): 234-40.

38 Carl Zimmer, “Tending the Body’s Microbial Garden,” in *New York Times (Science Times)*, June 18, 2012. At <http://www.nytimes.com/2012/06/19/science/studies-of-human-microbiome-yield-new-insights.html?pagewanted=all&r=0>, accessed November 5, 2016.

39 Zimmer.

40 Proal, Albert, and Marshall.

41 Keller, 165.

and in so doing, our focus; in that, our practices, to emphasize deep implication; to think not of what we can kill off, but what we might encourage to live.

“Even at the scale of the teeny tiny quantum,” Keller points out, “we witness how the material effects of common belief and presumptive knowledge tangle with our ethics. Does that tissue structure or quantum field of infinitesimal relations begin to take on the feel of an infinite body?”⁴² An infinite body, as the most macro of microbiomes, requires infinite care—requires, and gives, inseparable from itself. Keller’s clarification from the introduction to her text takes on a still greater resonance in this way of thinking bodies: “if the boundary marking difference shows itself also as fold, membrane, or connection, alterity requires an alter-knowing of its others, an altered state of radical interlinkage: what you do to the least of these you do also to me.”⁴³ The least—the virus, the microbe, the self as multiple other in “the ecologies of an unbounded relationalism.”⁴⁴ Of course all relation is dangerous, every vulnerability also a risk. But not every risk is an evil, and perhaps our tendency to over-identify them thus is entangled in the vigilant violence of our response. Perhaps we can surpass some of our fear of the different, which has kept us so long shut outside of our own gardens. Perhaps we best care when we refuse to seal off borders, and allow instead the transfigurations of our vulnerable selves.

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42 Keller, 129.

43 Keller, 23.

44 Keller, 24.

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