What should the humanities be now? In the face of diminishing majors or concentrators, diminishing resources, diminishing prospects for newly minted Ph.Ds., this question haunts many of us in the field. Today I’d like to offer one possible answer—or perhaps intervention—by proposing that we respond to and incorporate new definitions of the very term that lies at the center of the humanistic project; the human. While some might hail this new human under the banner of the “posthuman,” I will argue today that humanists gain more by remaining rooted and invested in an expanded definition of what we currently are. In that way, we can explore new disciplinary paradigms, cross once intractable boundaries, take up expanded topics of inquiry, and along the way do some serious soul searching. As we will see, there are promising signs such work is already underway.

So my talk will have three parts. First, in Part One I’ll briefly survey how medical, philosophic, and technological trends have resulted in an altered definition of the human body and mind. Second, in Part Two I will quickly describe how some scholars in the humanities have begun to rethink their disciplinary efforts as a result. I’ll describe how transdisciplinarity—especially the crossover from the humanities and the social sciences to the sciences as well as the reverse—has begun to unfold. I’ll also
describe how this transdisciplinarity moves us forward, out of the disciplinary impasse once characteristic of high poststructuralism. Lastly, in Part Three I’ll address the question of how do those of us, like myself, with our traditional training in specifically literary and visual arts, might begin to respond in our scholarly work and in our pedagogies.

**Part One: Changing Concepts of the Human**

We start with the human body, where recent advances in life sciences have led to new ideas about our human corporeality. As scientists rethink biological matter, we learn that all material phenomena are open and complex systems with permeable boundaries. And what is true about all materiality is true about human materiality as well: like anything made of matter, the human body is no longer considered to be discrete, bounded, and self-enclosed. Instead, it is porous. We now recognize, for instance, that the human body encompasses a variety of non-human life forms contributing to its well-being. Many of those non-human live in the human gut. Just think (as does Timothy Le Cain at the very beginning of his book *The Matter of History*) of the microbes that live in your gut, in your mouth and lungs and on your skin: Le Cain point out that, as an adult, we may be carrying more than three pounds of bacteria in our bodies (4). Thus, though we typically envision our human bodies as self-enclosed systems, with an epidermis that clearly demarcates the human within from the non-human without, it is probably more scientifically accurate to think to imagine the human body as being the host to a highly significant number of non-human guests. By one 2012 estimate, 100 trillion bacteria exist in each healthy adult. As Julia Adeney Thomas asserts, “For all practical purposes, then,
the distinction between ‘us’ and ‘them,’ human and microbe, has eroded away on this biological scale…A person is not an individual but a congregation” (1594).

In this way, new work in the biological sciences puts pressure on a binaristic understanding of the human and non-human within human corporeality. Similarly, new work in neurological and cognitive sciences challenges another long-standing opposition—that of body and mind. In recent decades, versions of vitalism have resurfaced to challenge Cartesian dualism and to refute the mind-body divide. In the political arena, Jane Bennett is the most recognized proponent of a materialist vitalism that, following Spinoza, refutes the idea that materiality is passive or mechanical “under the direction of something nonmaterial, that is, an active soul or mind.” Instead for her, materiality is “lively and self-organizing” (10). Neuroscientists echo Bennett when they locate various somatic states in the very material processes that are constantly unfolding in the human brain. Just as for Bennett, the “mind” or “soul” cannot be said to exist apart from its material manifestation, for many neuroscientists, human cognition does not exist apart from the material processes that enable it.

To put the matter more simply (echoing Le Cain here), it is not the case that we think and our body does. Our minds are not disembodied, immaterial entities. Rather, all of our cognitive functions can be traced to specific material effects. For instance, as Daniel Lord Smail points out, our states of mind are not “ghostly things flitting through our consciousness.” Instead, writes Smail, within the brain we find “an array of hormones and neurotransmitters such as testosterone and other androgens, estrogen, serotonin, dopamine, endorphins, oxytocin, prolactin, vasopressin, epinephrine, and so on”—in other words, a host of chemicals that release at the end of nerve fibers, diffusing across
synapses, and causing the transfer of impulses to muscle fibers. As Smail usefully summarizes, “produced in glands and synapses throughout the body, these chemicals facilitate or block the signals along neural pathways. They induce the somatic states revealed on or in our bodies and help determine how we feel” (113). In short, materials effects produce the very sensations of human consciousness and human awareness.

We have been observing how specific binaries—inside and outside corporeality, mind and body or spirit and matter—prove fallible in an enhanced definition of the human. In addition, the undoing of a binaristic understanding of the human is further evidenced in the debate over extended cognition. The seminal (and go-to) essay on this topic, simply entitled “The Extended Mind” by Andy Clark and David Chalmers, was written in 1998, several years before the introduction of the I-Phone. Nonetheless this essay anticipates a very familiar debate: is the human being enhanced by the various technologies now used to, for instance, extend memory, facilitate communication, navigate, in other words THINK for us, or is the human being somehow diminished by our reliance on tools like computers and I-Phones?

Clark and Chalmers begin their essay with the assertion that human cognition does not uniquely lie within a “skin/skull” boundary. In this way, they contest the binary divide between what is inside that “skin/skull” boundary and the rest of a world that offers powerful tools for cognition. In addition, they argue that cognition should be taken “as continuous with processes in the environment” (9, 10). That is to say, though there are certainly those of us who bemoan the way our students are tethered to their technological devices (and I’ve done this myself), it is equally possible to view this tethering as an inevitable and necessary fact of human evolution—not a lessening or
diminishment of human capacity, but a thrilling enhancement. I’ll say more about this at
the end of my talk, but for now I want to pause to acknowledge how the idea of
extended or sometimes enhanced cognition will already been familiar to those of you
with the work of Bruno Latour, among others.

As a prodigious writer on the topic of humans and science (among innumerable
other topics), Latour is one of the most important contributors to the effort to redefine the
human. We could spend a great deal of time on his enormously influential body of work,
but to cut to the quick, let’s take one of his apparently simpler assertions: “humans are
no longer by themselves.” That is, as any theory of extended cognition would suggest,
humans inevitably locate themselves in complex assemblages in which agency is spread
among human and non-human actants alike. Thus, for Latour, “There us no sense in
which humans may be said to exist as humans without entering into commerce with what
authorizes and enables them to exist (that is, to act).” Or, as he writes elsewhere, “I live in
the midst of technical delegates; I am folded into the non-human.” Latour famously uses
the example of someone who takes a gun into his hand: “You are a different person with
a gun in your hand…you are modified by the gun—more or less so, depending on the
weight of the other associations that you carry” (179). But I also think that, in several
ways a pencil offers an equally compelling example of how the human is transformed in
relation to the objects it invents and deploys.

Without access to not only a pencil but to all related forms of technology for
writing, you would be a profoundly different human from the person you are today.
Similarly, my laptop has made me into a radically different human-writer from the person
I was, way back in the late seventies, when I wrote with pen on paper and then
laboriously transferred my carefully wrought ideas to semi-permanence (always with the anxiety that paper could be destroyed) via a typewriter. Different tools, different writer, different kind of human. As Latour reminds us: “To conceive of humanity and technology as polar opposites is, in effect, to wish away technology: we are technical animals, and each human interaction is sociotechnical. …Objectivity [meaning pencil/word processor] and subjectivity [me as a grad student/me as a writer now] are not opposed, they grow together and they do so irreversibly.” This perceived link between objects and subjectivity has proved especially fruitful to historians of science who now direct their focus from individual minds to the collectivities that make scientific thinking possible.

In short, it now becomes impossible to define the human without due consideration of all forms of technology which are now seen to make the human as much as the human makes them. Providing significant pushback to ideas about genetic determinism, evolutionary biology takes this idea seriously to study how material things not only cause serious events like disease or famine, but also fundamentally alter the very genetic code of humans and animals. Thus new narratives about human biology arise. In the developing field of epigenetics, as well as the related field of systems biology, the human body is increasingly seen as an “open system” whose neurological functioning interacts in significant ways with the environment. Le Cain summarizes the central premise well: “the evolutionary process stems not from genetic changes but rather from the way anthropogenic niches affect the biological development of individual organisms during the course of their lifetimes” (101). In other words, here we are seeing significant pushback to the notion of simple genetic determinism in favor of a much more dynamic
relationship between human materiality (in this case our DNA) and the environment.

So far we have been tracking two major take-aways with significant implications for those of us working in the humanities. First, I would argue that the definitional changes we have been following result in a major challenge to the myth of radical human individuality, as well as the attendant concept of androcentric power that has for some time subtended the humanist paradigm. It no longer seems to be the case that humans enjoy a boundless capacity to do everything “on their own,” deploying inert materials that they have “mastered” or bent to their will. Basic principles of Newtonian physics, in place since the early 18th century, prove inadequate to a world where materiality is now understood as dynamic, active, and agentic, or tending towards its own purposes. Sometimes those purposes work—and have worked—to human benefit—and sometimes they don’t and haven’t.

The second major take-away is that we no longer have the privilege of thinking of ourselves as discontinuous with nature. Here another binary—that of human-animal is challenged by the insight that the human is a part—indeed a subset—of the animal world, as John Berger among others would say. Indeed as Smail reminds us, we share much of our material being—and in particular our chemical make up—with most other animals (113). Recent work in Animal Studies contests a Cartesian divide between the human being who has a “soul,” and other manifestations of sentience and autonomous action, and the animal conceived as non-sentient and not self-directed. Also on the horizon is the emergent field of Plant Studies as proposed by Michael Marder, in which a western philosophical perspective on plant life is deconstructed to reveal how plants are “capable, in their own fashion, of accessing, influencing, and being influenced by a world that does
not overlap the human Lebenswelt but that corresponds to the vegetal modes of dwelling on the earth” (8). For Marder as for others such as Luce Irigarary (with whom Marder directly converses), the important gesture is to both refute the idea that the human resides on one side of culture/nature divide and to significantly widen the concept of “life” itself.

**Part Two: New Disciplinary Paradigms**

What should be clear by now is the pressing need for humanities to reach across disciplinary divides and in particular to engage with scientists who are similarly inclined to step outside a disciplinary immersion to ask what might be learned from engaging with humanistic perspectives. I have two main points to make here. First, even up to this point I have touched upon the way in which the humanities begin to look different when science walks in: historians like Le Cain or Smail lead the way when they bring chemistry, biology, or neuroscience, into their work.

Second, I want to suggest that very recent work like Le Cain’s or Smail’s can be seen against the backdrop of materialist feminism from the end of last century. I would not be alone in making this point. For example, in an essay from 1999 entitled “Agential Realism: Feminist Interventions in Understanding Scientific Practices” Karen Barad framed the debate as a tension between those proposing “realism” and those adhering to “social constructivism.” For her, the realists (i.e. old school empirical scientists) posited a “material world outside of discourse”—in other words, an empirical reality existing independent of human ways of knowing. Social constructivists, in contrast, insisted that nothing can be known outside of human, socially constructed discursive practice.

In her essay, Barad calls a truce when she establishes a middle ground between the warring parties. She coins the term “agential realism” to provide an understanding of
science that is “material discursive.” That is, a hard-core material reality that does indeed exist, yet scientific practice is discursive to the extent that scientific practices are “intra-actions of multiple material-discursive apparatuses, including but not limited to the instrumentation employed.” In other words, while the presence of actual materiality cannot be denied, the nature of that reality must inevitably be known through human-based means—“apparatuses.” For physicists, this might mean the technology of scanning tunneling microscope, but it might also mean a number of other factors, as Barad points out, including the dominance of visual culture; particular cross-disciplinary scientific techniques; gendered and raced divisions of labor (see also Sandra Harding); the necessity of funding; and so on. Barad elaborates, “getting the microscope to work involves a range of practices including judgments identifying certain aspects of images as artefacts and others as constituting ‘data,’ and under what conditions and so forth.”

Now, on the idea that technology and the human are mutually constitutive, Barad and Latour start to reinforce each other. In addition, her idea of multiple apparatuses at work in the physics experiment resembles the concept of the assemblage, a term that is traced to Deleuze and Guattari but also famously deployed by Jane Bennett to explain the multiple forms of human and non-human agency in play during any single event. (Her example is a blackout.)

Following on the heels of Barad’s work, *New Materialisms: Ontology, Agency, and Politics* edited by Coole and Frost in 2010, makes it obvious that cross-disciplinary work is the way forward beyond the poststructuralist impasse that had previously brought humanists and scientists to a point of open hostility. Coole and Frost are professors of Political and Social Theory, as is Jane Bennett, and much new materialist work currently
grounds itself in this field, even while it reaches with octopus arms into related disciplinary areas.

Coole and Frost provide a very useful summary of the ways in which, under the banner of new materialisms, academic scholars have come to explore a middle ground, a place where “society is simultaneously materially real and socially constructed: our material lives are always culturally mediated, but they are not only cultural.” Here is the rest of their assertion:

It is entirely possible, then, to accept social constructionist arguments while also insisting that the material realm is irreducible to culture or discourse and that cultural artifacts are not arbitrary vis a vis nature. Even as the most prosaic or carnal lifeworld unfolds within a socially constructed milieu, it does not follow that a) material objects or structures are devoid of efficacy in the way they affect either our moods or well-being, or our concepts and theories b) matter is without recalcitrance or directedness in its own brutal way, or c) acknowledging nondiscursive material efficacy is equivalent to espousing a metaphysical claim regarding the Real as ultimate truth (27).

In this rather dense quotation, we can hear two claims being made: the first is perhaps an understanding of materiality itself (as they write elsewhere): as “excess, force, vitality, relationality” or as active, self-creative, productive, unpredictable (9).

The second claim is the necessity of a delicate balance between acknowledging the force of that materiality and recognizing we can do so without defaulting to an earlier, static, or more traditional understanding of “Nature” in any one of its guises. Le Cain directly addresses this issue when he writes that “contemporary scientific thinking points
us toward not a fixed and deterministic material world but rather one that is a seething cauldron of constant innovation and growth” (196). Thus, a science that embraces a vital materiality becomes self-reflexive and flexible, and in the same moment, humanists writing about materiality must come to embrace science for its powerful and necessary work. Or, as Latour has written very recently, “We need to count on the full power of the sciences, but without the ideology of nature that has been attached to that power” (65).

**Part Three: The Work of Humanists**

But what does all of this mean or amount to for those trained in the traditional discipline of literary and cultural analysis? How might our own humanistic practices alter to respond to the work I have been describing today? The answer is surely that both the content and the approach of literary-critical analysis must change if we are to fully engage with the terrestrial challenges that beset us. In addition, any literary-cultural response must amount to something more than “add certain ecological themes and stir.” As Donna Haraway writes, “It matters which stories tell stories, which concepts think concepts…We need stories (and theories) that are just big enough to gather up the complexities and keep the edges open and greedy for surprising new connections.” To meet this challenge, we need first to address and seriously consider the human who is at the center of new humanism.

As we have already seen, newer definitions of the human put pressure on two key themes central to the western literary tradition—and the realist tradition in particular. First, new research in biology undermines the idea of a radical human individual who is resistant to interconnectivity. This research might lead literary humanists to query—and to teach—how and why the idea of the insulated individual—the Robinson Crusoes of the
literary canon—has so preoccupied the literary and cultural imagination. At what price have humans told themselves a story of the mythic individual, capable of living in isolation from all other species? What are the consequences of a western literary tradition that privileges stories of human mastery of materiality above all else? Second, related to this idea is the myth of terrestrial surplus. (“Go there! Take it! It’s all for you and there’s a lot more where that came from!”) How have our stories, especially those in the western literary canon, consistently ignored or denied the fact that the materiality over which human assert their dominion is neither mute, passive, nor endlessly giving? How do we begin to create new stories about our entanglement with vibrant terrestrial forces?

Thus it’s quite possible, that along with a new critical eye focused on the canon, we need to be offering our literature, history, and philosophy students different kinds of texts to read, not only texts that come from a vast array of cultural moments, but also texts that engage in profound and complex ways with questions of materiality—I’m thinking, on the one hand, of Lucretius On the Nature of Things (first century AD), and on the other Richard McGuire’s graphic novel Here (2014) which tells non-chronological story of one US suburban location in Deep Time. In addition, the challenge to the literary discipline cuts still deeper: two key organizing principles of humanistic studies—the historical period and the idea of national literatures—are certainly worth revisiting at this time.

As Amitav Ghosh also intimates, it may be time to interrogate the concept of national literatures against the more urgent needs of a wider, human population that is now very much in movement. Latour echoes this idea when in Down to Earth he insists on a necessary shift from the nation state to the more encompassing concept of the
“terrestrial” because now more than ever “animate beings are not limited by frontiers and are constantly overlapping, embedding themselves within one another” (83). Furthermore, Latour writes, “a territory, in fact, is not limited to a single type of agent. It encompasses the entire set of animate beings—far away or nearby—whose presence has been determined—by investigation, by experience, by habit, by culture—to be indispensible to the survival of a terrestrial.” He follows this assertion with a list of questions: “As a terrestrial, what do you care most about? With whom can you live? Who depends on you for subsistence? Against whom are you going to have to fight? How can the importance of all these agents be ranked?” These and similar questions intimate that a different kind of humanitist engagement with a different kind of focus on the human awaits us.

So we begin to recognize how humanistic study is still structured according to the late eighteenth-century principles of segmentation, classification, and taxonomy. These might have been the useful and necessary intellectual tools designed to help facilitate mastery over a growing body of information that once threatened to overwhelm human consciousness. But we live in an age of cognitive quickening. As we’ve seen, human cognitive function now expands due to its “coupling” with external objects and forces (like computer generated data bases) that significantly enhance our ability to process and understand information. In other words, I’m wondering whether both national and period boundaries in humanistic studies themselves belong to a prior step in our cognitive evolution, and whether it’s time—in the presence of extended cognition—to move forward to the reorganization of both the scope and the methodology of our disciplines.
It is certainly to me clear that my current undergraduates learn in vastly different ways than they when I started teaching in 1981. To begin, they no longer read as we once did. Cognitive quickening means human attention is no longer attuned to the slow process of reading each word, one after another. This means the challenge of reading a four hundred-page novel now routinely defeats most undergraduates. It’s possible we can still teach the skill necessary to accomplish the task, but more likely we are going to have to develop pedagogies that acknowledge how our students already have “extended cognition” and that their capacities are not necessarily being diminished, but enhanced in ways that can be made to work for them. This is certainly something people working in Digital Humanities already know.

So here I have been suggesting that we take something out of traditional humanistic disciplines, namely their mooring in a specific eurocentric interpretations of place and time. I have been suggesting the need for new kinds of literary curriculum and new pedagogies that recognize enhanced cognition. Yet I am simultaneously suggesting that we bring to the foreground and emphasize something the literary analysis has always done best—namely, to teach students how to listen to and to respond to a world that articulates on so many levels—in a wider sense, how to “read” what lies right before our eyes.

Here I’m taking my cue from a subset of scholar operating under the banner of what they call a “material ecocriticism.” This group of scholars, in the words of Serenella Iovino and Serpell Oppermann, recognizes that “the stories of matter are everywhere: in the air we breathe, the food we eat, in the things and beings of this world, within and beyond the human realm. All matter, in other words, is ‘storied matter.’”
Material ecocriticism, they write, “examines matter both in texts and as texts.” While the examination of narrativity in texts is commonplace, matter itself similarly yields, in their formulation, to critical reading practice: “Even though no preordered plot can rigorously distinguish…stories of matter, what characterizes them is a narrative performance, a dynamic process of material expressions seen in bodies, things, and phenomena co-emerging from these networks of intra-acting forces and entities.”

Scholars interested in following the path of other material eco-critics might also want to engage with work currently being done in eco-semiotics, which by definition attends to “the inclusion of communicative processes of the whole ecosystem.” Eschewing the idea of “nature as a text,” scholars in this field privilege instead questions about and research into “the whole communicative structure of the geographic space.” And here I think we see one further important consequence of overcoming the human-animal binary: if humans are not in opposition to animals, but indeed a highly specialized subgroup within the animal kingdom, then the research question changes. Instead of asking “how do animals (and other living creatures) communicate like us, eco-semioticians ask “what is it we, albeit on a much higher and more complex level, do that all animals do? How is human language itself a specialized subset of messaging within a larger field of terrestrial communication?”

By now, some of you may be wondering whether I haven’t been talking about environmental humanities this whole time. And perhaps it is true that the only humanistic practice worth doing in the moment is environmental humanities. I second that proposition—as long as the “human” at the heart of such a project is the twenty-first century human that we have been following—porous, interconnected, embedded within
nature, inevitably technologically driven, and so on. I have already suggested that transdisciplinary involvement is imperative. Yet the contribution of literary study to this field is especially invaluable to the extent that literary analysis has always been about paying the closest attention, about focusing on the details, about *reading*. It has always been about listening and opening the human mind up to what is already there. (See the work of Iovino on Venice.)

In addition, the literary discipline, my discipline has always committed itself to human expression and to language. And that is why, as I come to my conclusion, I don’t think we can ever really be posthuman: the very term is paradoxical. Think about it: to evoke and understand the term inevitably requires resorting to human language, human concepts, human terms, human thoughts. Though I understand the political impulse to imagine the posthuman (see Braidotti), I don’t think it’s possible to imagine what lies beyond (or after or outside?) the human or beyond our persistent human frameworks. Don’t those frameworks change? Of course. That has been the focus of my talk. As I have been arguing, we do the most useful work when we hone in on and work to redefine the human who persists before our eyes.

I have an additional reason for wanting, as a humanist, to resist the concept of the posthuman, namely: I do not want to relinquish moral authority over the human. A few eco-optimists have turned their attention the human who will survive the catastrophic changes that are about to bear down on us. But even in that best-case scenario, a time of massive social upheaval awaits us—a time of radical imbalance in the distribution the world’s resources when a few privileged individuals manage to martial those remaining resources for their own benefit. That is the time that is coming and arguably it is already
here. This is the time, then to be human-ists, that is, individuals who are profoundly committed to using uniquely human resources for socially just human purposes with the full awareness of what is at stake not only for ourselves, but (as Haraway would put it) for all our kin. It’s true: 200,000 years of human history is not a terribly long time when seen against terrestrial unfolding. But to say that humans have had a short duration on the planet is long way from saying their presence has been without significance, meaning, or potential. That potential might still find its expression in a twenty-first century disciplines dedicated to a reconfigured human.