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STEMM-Humanities Co-Teaching and the Humusities Turn

Hella Bloom Cohen

Abstract: *Donna Haraway calls for a new Humanities that attends to the role of this traditionally anthropocentric field on a damaged planet. The Humusities, she offers, empower us to teach at the intersections of observation, speculation, and affective reasoning. This article considers co-teaching and interdisciplinary teaching structures as part of the Humusities model. Drawing from interviews and pedagogical materials of professors who have co-taught STEMM-Humanities classes, student feedback from these sections, and current research on interdisciplinary education, I theorize the possibilities and limitations of the interdisciplinary Humusities at the undergraduate level. The article explores how we translate the tenets of Haraway into a co-taught curriculum, while considering the objectives, benefits, and drawbacks of doing so. Several pedagogical and procedural issues are discussed: “norming” student performance in courses where two or more instructors are likely using different assessment modalities; navigating STEMM-Humanities co-teaching within current university budget structures; considering how university size and collegial climate affects implementation; and revealing roadblocks that exist relating to Registrar policy, enrollments, student majors, and hiring practices. I also speculate how the Humusities turn can redistribute university wealth and mitigate educational threats at the state and federal levels. Like science fiction in Haraway’s *Staying with the Trouble*, co-teaching across the Humusities engages in “storytelling and fact telling; it is the patterning of possible worlds and possible times, material-semiotic worlds, gone, here, and yet to come” (31). With this sentiment in mind, I explore what is entailed in the process of humanizing STEMM and composting the humanities.*

The Humusities—Donna Haraway’s neologism for ecoconscious Humanities in the post-Anthropocene—empower us to teach at the intersections of observation, speculation, and affective reasoning. The term invokes the muck and the mud within the etymology of “humus,” and invites a return to the soil for those of us in a field that has historically looked up rather than down. After Haraway, the silos of the laboratory and library stand poised to disassemble. Stringed course content and interdisciplinary teaching structures can prepare students to disprivilege their Enlightenment ‘Ts—to slow decay and to sow growth. Humusities courses can look like: hermaphroditic snail behavior and gender nonconforming literature; urban gardening and black theological ecologies; actuarial modeling and critical studies of race and ethnicity; zoological planning and animal narrators; global fashion marketing and Silk Road history; applied nuclear physics and Daoist peace philosophy; graph theory and Haraway’s “tentacular thinking.” These are examples of themes—some imagined, some realized—in courses within a STEMM-Humanities co-teaching model, and this article will consider that model

as a method of implementing “the Humusities for a Habitable Multispecies Muddle.”¹ I explore what is entailed in the process of humanizing STEMM and composting the humanities.

Drawing from interviews and pedagogical materials of professors who have co-taught STEMM-Humanities classes, student feedback from these sections, and current research on interdisciplinary education, I theorize the possibilities and limitations of the interdisciplinary Humusities at the undergraduate level. I also advance a materialist critique of Haraway as a warning for those of us doing the work of remaking the liberal arts to avoid what I see as her class-blindness as we deploy co-teaching and multidisciplinary programming. Guiding pedagogical questions include: How do we translate the tenets of Haraway into a co-taught curriculum? What are the abstract and measurable objectives, benefits, and drawbacks of doing so, and on what philosophical assumptions are we operating? How do we “norm” student performance in courses where two (or more) instructors are likely using different assessment modalities? Guiding procedural questions include: How does STEMM-Humanities co-teaching work within current university budget structures, and how does university size and collegial climate affect its implementation? What roadblocks exist relating to Registrar policy, enrollments, and student majors? How does co-teaching impact hiring practices? How does the Humusities turn redistribute university wealth, and/or encroach upon disciplinary turf? Lastly, but not exhaustively, how do the Humusities talk back to educational threats at the state and federal levels? Like science fiction in Haraway’s *Staying with the Trouble*, co-teaching across the Humusities engages in “storytelling and fact telling; it is the patterning of possible worlds and possible times, material-semiotic worlds, gone, here, and yet to come” (31). By softening the hard sciences and hardening the soft sciences, hopefully we might open up the curiosity cabinets of both to ont(ec)ological questioning.

Haraway offers a mantra that I suggest we embrace to re-create the liberal arts: “becoming with.” She announces the multidisciplinary genealogies of her heuristics—loudly and often—while refusing to submit to the defeatism or sentimentalizing entailed as we watch our departments erode or in some cases die (12). This furious commitment to hope she labels “becoming with,” and the entire work is a vignette-like collection of “becoming with” examples. For Haraway, these models look like using string theory, game theory, and calculus (iterated integrals) to theorize “terrapolis”—companion species terraforming in infinite permutations. This also looks like STEMM-Humanities community alliances such as a Southern California human-Racing Pigeon relationship building initiative, sponsored by a collaborative arts and ornithology program, whose platform is the online community PigeonBlog. Through PigeonBlog, Haraway explores the politics surrounding community-based human-animal work that does not have the stamp of academically sanctioned STEMM research, commenting that “perhaps it is precisely in the realm of play, outside the dictates of teleology, settled categories, and function, that serious worldliness and recuperation become possible,” and adds, “That is surely the premise of SF” (23-24). Haraway’s definition of SF is “a sign for science fiction, speculative feminism, science fantasy, speculative fabulation, science fact, and also,

1. The title of the 2018 Modern Language Association panel that facilitated an earlier version of this article; it plays off of Haraway’s phraseology in *Staying with the Trouble*.

string figures” (10), and adds that *play* is essential to her vision of SF as the site of recuperation of our damaged planet. “Playing games of string figures,” she writes, “is about giving and receiving patterns, dropping threads and failing but sometimes finding something that works, something consequential and maybe even beautiful, that wasn’t there before, of relating connections that matter, of telling stories in hand upon hand, digit upon digit, attachment site upon attachment site, to craft conditions for finite flourishing on terra, on earth” (10).

I want to suggest that as pedagogues we take from Haraway what she finds at the center of multidisciplinary storytelling: joy and play. (As we are busy lamenting the neoliberal institution’s instrumentalization of knowledge production, is it possible to remember fun?) With play at the center, she is able to critique the process by which human-animal projects are given sanction, for instance. Under the umbrella of Serious Research, she wryly mentions, projects that look and smell like pigeon fancy but masquerade as humorless are often not subjected to the same objections regarding animal consent as the Southern California racing pigeon collective has been, but she identifies amusing human-animal projects as equal or even better examples of generative worlding, or world-recovery. Serious Research, devoid of fun and story-telling, yet the kind that gets grants, assumes a mythic human/nature divide. As curriculum designers, program directors, and stewards of the new academy, we ought to be more intentional about collapsing that divide. The result, Haraway suggests, are more generative and responsible companion species interactions, and I argue this progressive thinking also generates a methodological and institutional upshot: more and more purchase in the premise that the STEMM/Humanities dichotomy is itself mythological. Moreover, we seem to have reached an impasse, where that divide is no longer even possible, both for practical and ethical reasons. The budget crisis in the Humanities, first ushered in by corporate neoliberalism, now affects the sciences, too, in the current reactionary and anti-intellectual Trumpian era.

Least we get lost in the optimism that *Staying With the Trouble* exudes, Haraway’s notion of play is far from utopic. There is no universalizing law for how to treat—how to “be-with”—animals; likewise, the very ethic of interdisciplinarity—that boon that will help multispecies organisms tell our stories to each other—falls short of implementation given the deep class barriers that scaffold Higher Ed, and the corporate institution’s exacerbation of these barriers despite its promise to correct them. How exactly the distinctions between different types of companion species interactions are arranged, what produces these differences, and how to secure funding to study and play with these formations could be located in a Marxist or materialist investigation, but Haraway avoids this avenue of evaluation. While a sustained class analysis is all but absent in Haraway, she does seem to gesture to it anecdotally, as in the comment, “if only we could all be so lucky as to have a savvy artist design our lofts, our homes, our messaging packs” to be more sustainable (29). Since capitalism’s excesses form the basis of ecocritical thought, perhaps it goes without saying that social class distinctions produce, in part, distinct sets of companion species interactions. I am thinking, for example, of the intersectional ethics relating to the role poverty plays when decisions are made to support or resist big agribusiness and industrial farming. As we remake the Humanities into the Humusities, we need to be more intentional and proactive about leveling these distinctions. Equity must

form the basis of STEMM-Humanities co-teaching and interdisciplinary programming, rather than serving as an afterthought.

Then there is the potential recklessness of prematurely declaring the death of the Human. In the Introduction to *The Posthuman*, Rosi Braidotti underscores the hypocrisy of, on the one hand, the West's ubiquitous privileging of the human category, and on the other hand, its inextricable assemblage to "rights," when so many humans have so little of the latter. Moreover, "not all of us," she points out, "can say, with any degree of certainty, that we have always been human, or that we are only that. Some of us are not even considered fully human now, let alone at previous moments of Western social, political and scientific history" (1). In her final pages, Braidotti circles back around to challenge the prefix "post," in turn: "Not all of us can say, with even a modicum of certainty, that we have actually become posthuman, or that we are only that" (186). Both Braidotti and Haraway are materialists, and both are affirmative in their politics and in their solutions to the environmental crisis caused by anthropocentrism, but, in tone, Braidotti proceeds with caution where Haraway trudges forth in an almost euphoric celebration of the postindustrial muck and the possibilities therein. Let Braidotti co-guide us in our co-teaching methodologies.

A capitalist critique in *Staying with the Trouble* is relegated to questions about the life of the university, rather than individualized, lived experiences of capital; true, we can only work within the confines of our own power communities. Since readers of this venue likely are uniquely poised to effect change within university structures, Academia is my focus here. Anna Tsing, the feminist anthropologist and cultural critic who chronicles the diverse lives of fungi, prefers academic work that declines "either to look away [from the garbage produced by capitalism's excess] or to reduce the earth's urgency to an abstract system of causative destruction" (Haraway, *Staying* 37). This work excites Haraway as it "characterizes the lives and deaths of all terran critters in these times" (38). Where does worrying about turf in academia fall into this preferred paradigm? Haraway would just as soon do away with siloed academic disciplines. We might extrapolate this from her utopic yet cheeky call to "Imagine a conference not on the Future of the Humanities in the Capitalist Restructuring University, but instead on the Power of the Humusities for a Habitable Multispecies Muddle!"

Multidisciplinary panels, conferences, programs, and even departments are cropping up across industries, while Academia—a body that historically has been the safeguard of non-instrumentalized knowledge—guardedly follows suit, as it tries to balance relevancy with integrity. It can be hard to determine which motivating factors are entirely market-driven and which are holistic, soul feeding, and brainy. If our metric is environmental health and our compass is the survival of nonhuman and human life, I think we just might avoid a wrong turn. The stakes are high for us to imagine our intellectual labor as prescriptive, as predictive of better possible futures, rather than just carnival in an otherwise generic disciplinary order!

In all seriousness, how very small worrying about disciplinary boundaries feels in a neofascist era, in light of the greater threat to thought at every level—both microbiologic and institutional. My next signal in this essay is to probe how we might mitigate this threat at the institutional level, even if just in our tiny corner of the Capitalosphere. Implicit in Haraway's work is a challenge to the *not*-Humanities to see themselves as

complicit in storytelling, to decompose the notion that “hardness” is real and the only sensory space that “matters.” Humusities work represents a twofold challenge aimed at the STEMM-Humanities divide on both ends: the challenge is not just to the hard sciences to see themselves as soft, as engaged in the art of mythmaking just as much as the Humanities albeit through different methodologies, but also to the Humanities to admit that storytelling is not owned by humans. There exist practical applications of decentering the human story even in the most unlikely of places. Most Humanities academics are aware of underlying neoliberal motivations to diminish the arts in the pursuit of professional programs, motivations that share a timeline with the move to value science over stories, but are monomaniacally market-driven in a way that the first phase of Humanities erosion was not. Hence, it is no wonder that Humanities scholars might be wary of being team players during our current shift.

Perhaps, though, we have not considered how this shifting emphasis actually exposes the instability of the very category “professional,” and how that might ultimately be beneficial for us. For instance, many universities—usually with external grant incentives—have shored up new funding initiatives around bridging the arts and sciences and healthcare. The crisis within the latter clearly drives the funding swell, especially given its centrality as a talking point in recent national politics. The multibillion-dollar industry has a lot of concerned players: Big Pharma, the employees who work for the biggest employer in the U.S. (Thompson), and the roughly 80 million uninsured or underinsured Americans for whom the system is not working (“32 Million Underinsured”), to cite a few. While this funding is unfairly instrumentalized and academically restrictive, especially to scholars for whom adding a health initiative to their field is a stretch, it is often more broadly construed than one imagines; additionally, it is folded within larger machinery already in place to support interdisciplinary programs, curricula, and research that bridge the hard and soft sciences generally. One finds a glut of funding of the sort in institutionally hosted grant matchmaking repositories like Pivot. I argue that this represents an unintended consequence of the market-driven transference: ever-expanding bounds of what constitutes the “professional” and/or the “hard” sciences and an eagerness of funders and their university partners to consider offbeat ideas and projects that reach into the liberal arts. This can only eventually fold back in on itself, collapse back into the (post)human, the liberal, the storytelling, the foundations. For some, to expand one’s field may hurt a bit in the interim, and it may feel like one is giving in to a utilitarian value system, but if the eventual effect is fewer siloes and more cosmic thinking, it just might be worth it. The cautionary tale, however, would be told in retrospect from a dystopia of total privatization, and that will be the most difficult byproduct to avoid. Although, I am not entirely convinced such privatization will not happen irrespective of the integrity of our siloes; in which case, our social fabric is already on fire, and we will have to rise from the ashes regardless.

An announcement on the latest report from the National Academy of Sciences on the merits of STEMM-Humanities initiatives conveys “an important trend in higher education: programs that intentionally seek to bridge the knowledge and types of inquiry from multiple disciplines—the humanities, arts, sciences, engineering, technology, mathematics, and medicine—within a single course or program of study. Professors in these programs help students make connections among these disciplines in an effort

to enrich and improve learning” (“News”). When The National Academies reviewed data culled from more than 200 integrated programs and curricula nationally on the outcomes relating to integrative approaches to learning at the graduate and baccalaureate levels, they found “limited but promising evidence that a variety of positive learning outcomes are associated with some integrative approaches—including improved written and oral communication skills, content mastery, problem solving, teamwork skills, ethical decision-making, empathy, and the ability to apply knowledge in real-world settings.... Surveys show that these skills are valued both by employers and by higher education institutions” (“News”).

Many of us have already done this kind of work tangentially in our interdisciplinary curricula and scholarship, and perhaps in co-taught courses; I would urge expanding the model to be more intentional about STEM-Humanities pairings in particular, as well as to expand it beyond upper-level coursework, highbrow scholarly communities, and Honors programs. My current research on “aspirant” schools that include course pairings generally shows that the model saves the institution money. It is a cost-saver for several reasons: through a package deal, students save money on home credits by opting not to take the course in the “opposite” field elsewhere, as they often do; further, the model attracts revenue-generating grants for the institution.

Several U.S. universities and colleges are already catching on, deploying curricula that deemphasize humans as sole storytellers. Having examined course information and reflections from five Humanities pedagogues at varying stages in their careers from public and private institutions of different sizes and rankings, my general sense is that this model is successful, generative, and transformative for both student and instructor(s), with little-to-no negative impact on the institution’s bottom line. In cases where co-taught or team-taught STEM-Humanities courses satisfy two or more requirements for graduation and/or are available for banded tuition rates, this model represents money-saving opportunities for students, while at the same time opens up prospects for interdepartmental grants and external funding, bringing prestige and extra budgetary income to the institution.

One of my interviewees, AB,² a Philosophy doctoral candidate at a large public, R1 institution with medium-tier ranking³ and lower-tier endowment (309 million for a university of 40,000), co-taught a STEM pedagogy course designated as a Philosophy course with a Master Teacher from the Education Department. It was part of a pilot education program for prospective regional math and science teachers, whose headquarters are another large public R1 university with higher prestige and funding. The course satisfied the upper-level Scientific Perspectives requirement, as well as a university Core requirement, and its aim was to study the methods of math and science within the broader historical and philosophical context of these methods. AB reports that the most rewarding element of the course was:

watching students’ judgment about what they do transform. At first, they expressed nervousness about philosophy; about studying a subject that, in their perception, “doesn’t have any real answers.” They agreed that they like

2. To protect interviewees’ identities, initials used are pseudonymous.

3. Overall institution rankings based on *U.S. News and World Report*

studying math and science because there are certainties. Over the course of the semester, those certainties, placed into historical and philosophical context, began to look less and less so! I loved watching them find ways to transform their nervousness about uncertainty into excitement about new possibilities for joy, wonder, and discovery in what they study, and excitement about opening up a new generation to those possibilities.

For AB, teaching this course was an expression of her “philosophical/political conviction that a humanities education is necessary for a healthy, functioning democracy.” Aligning herself with Martha Nussbaum’s position in *Not for Profit*, she writes,

I am convinced that a humanities education is just what keeps democratic skills alive—imagining other lives through literature and art, asking critical and imaginative questions through philosophy, and realizing the historical and political contingencies at work in one’s worldview. As STEMM disciplines are often touted as those most profitable in terms of career trajectories and economic “development” goals, I think STEMM majors are more vulnerable to the gradual effacement of democratic values in the course of their education.

Another professor from a large, R1, top-tier public institution (3.6 billion endowment) reported success with three single-instructor STEMM-Humanities courses: a history of biology course, a course that interrogated the disconnect between popular and academic historical records, and a biographies of physicists class. This History professor, CD, discovered that his students experienced an attitudinal shift, from initial skepticism of this required class for those in the math and science education program, to surprise and joy. In CD’s words: “not all of them are as willing to believe that History is something that will be of value to them, especially the math majors. Still, most of those initial skeptics eventually change their mind, and it’s rewarding to see it happen.”

Feedback from an English professor at a well-endowed (4.1 billion), medium-sized private, top-tier liberal arts university reiterates the experiences of my public school interviewees. For four years, EF has co-taught an undergraduate honors seminar with the Chair of the Physics department on “Science/Fiction.” A full professor and former Chair, EF reports it as “the most rewarding undergraduate teaching experience of my career.” The course explores the relationship between science and science fiction by examining canonical scientific writing and SF. The course aims, according to EF, to scrutinize “the distinctive modes of imagination and style in the two activities, as well as their social and cultural influences.” In the past, EF also taught several iterations of a First Year Writing Seminar with the head of Information Technology on the topic of “Online Gaming.” In EF’s words, “We mixed game theory with the history and social implications of information technology while surveying some of the landmark video games from *Myst* to *Lord of the Rings Online*. This seminar came to a close when I put the whole thing online as a MOOC for Coursera, where 85,000 students have taken the class so far.” The multidisciplinary—though largely engineering and history—students receive elective credits for the course depending on their major. EF’s favorite thing about co-teaching in this model is that it broadens our understanding of the Humanities.

EF’s model reminds me of potential teaching points from Haraway’s collection *Simions, Cyborgs, and Women: The Reinvention of Nature*. In her chapter “Biopolitics of

Postmodern Bodies,” she praises researchers Terry Winograd and Fernando Flores for challenging the “rationalist paradigm for understanding embodied (or ‘structure-determined’) perceptual and language systems and for designing computers that can function as prostheses in human projects” (213). Haraway draws inspiration from their work to theorize “postmodern cyborgs that do not rely on impermeable boundaries between the organic, technical, and textual” (215). She endorses these cyborgs as they are “directly oppositional to the AI cyborgs of an ‘information society’, with its exterminist pathologies of final abstraction from vulnerability, and so from embodiment” (215). It seems to me that IT-Humanities hybrid courses work to position ethical reasoning at the center of an industry that is alarmingly powerful and increasingly deregulated.

An English professor, GH, from a small private, regional liberal arts university (\$74.8 million endowment) was similarly enthusiastic about an Honors Seminar she co-taught twice called “Writing Environmental Wrongs.” The curriculum included Environmental literature with Biology, centered on “The Prairie.” In her words, most fulfilling was

the expansion of knowledge I experienced, while watching the students experience a similar growth. It had been a long time since I’d had science, and the way we approached scientific thinking in that course was really complementary to the way we studied poetry and essays. The days when we were in the field, taking samples, watching bison, then lounging in the tall grass reading passages out loud were The Best!

Her enthusiasm was tempered by some sincere challenges, however, including “integrating the interdisciplinary content enough so that the students achieved both biology and lit learning goals. It was a lot of work for them and somewhat frustrating for each of us, at times. It definitely required thinking more broadly about our disciplines and how they intersect in the context of a liberal arts education.”

Overall, these STEM-Humanities classes proved successful despite significant differences among the bureaucratic structures of the universities, and faculty were able to teach within normal budget allocations and constraints of their contracts. I asked each professor whether assessment presented additional challenges in courses where two (or more) instructors were using different assessment modalities. All generally hand-waved the issue of “norming” student performance and confirmed that collegiality and transparency seemed to dissuade conflicts organically. Drawbacks emerged, however, regarding pressures relative to achieving tenure; from the perspective of one of the senior professors and former Chairs at a prestigious, research-driven institution, early-career faculty tenure files were perceived to be at risk if faculty taught too many courses not wholly and rigorously within their disciplines in their first five years. This suggests that while interdisciplinary training is an attractive aspect of an early-career faculty member’s curriculum vitae upon hire, in practice co-teaching is still devalued as one builds their professional profile toward tenure.

This may have something to do with the fact that many undergraduate institutions consign co-teaching and interdisciplinary collaboration to First-Year Core curricula, which may have the unintended consequence of demoting co-teaching in perceived rigor. These frameworks are easier to norm, which satisfies university assessment initiatives and accreditation rubrics, regardless of how comfortable individual faculty are with

leaving grades to be worked out organically. Universities do not like engaging in risk and tend to look toward aspirant programming to make broad or deep curricular changes. Numbers on the outcomes of interdisciplinary teaching in Core requirements often look favorable, as shown in a recent study on the effect of an Interdisciplinary First-Year Experience Program for Technology majors at Purdue University, which yielded measurable progress on students' "perceived learning transfer, and sense of academic engagement" (Chesley, Kardgar, Knapp, Laux, Mentzer, Parupudi). The report examined over 500 first-year students over a two-year span (AY 2015-2016 and AY 2016-2017) who took courses co-taught by Technology, English, and Communication instructors with the aim of producing better synthesis among all three fields through collaborative learning, lecture, and facilitation. Purdue's study cites ten previous records of improved undergraduate learning outcomes and retention among STEMM vocational majors (nine engineering samples, one accounting) who took integrated STEMM-Humanities courses in their first-year installment of the Core at their respective institutions.

University size and collegial climate does not seem to persuade or dissuade co-teaching, in the general sense. Where there is a will there is a way. STEMM-Humanities co-teaching works within current university budget structures if it is placed in the first-year Core, and continues to measurably improve retention rates; although, I should mention that this model is under fire at my home institution as university budget cuts have increased the need for faculty to take fuller loads in their home departments. The model can also work in special programs like Honors or, at bigger institutions, high school-to-college feeder programs with public STEMM initiatives like AB's, as long as these retain their own funding streams. Wealthy, private, medium-sized institutions such as my interviewee EF's have achieved integrated co-taught sections that allow students to "double-dip" within regular course structures, but as of now, these courses only count as electives. It would seem we are still a far cry from a fundamental interdisciplinary overhaul, which could in part be due to logistical difficulties in the Registrar, but is probably much more likely a symptom of enrollment-based economics.

Of course, this could all be assuaged with legislation that drastically reduces the privatization of Higher Ed, an improbable scenario in the U.S., especially given recent political trajectories. In the interim, I argue that the ideological shift of a Humusities turn, combined with the uptick in grant opportunities for STEMM-Humanities couplings, has the potential to redistribute university wealth. Not only could this shift arrogate more external funding to the Humanities, thus reducing the dependence on enrollment, but it could also better address the gender and race disparities that persist within both STEMM and Higher Ed at large. If colleges and universities enable true interdisciplinarity, taking risks by expanding co-teaching and integrative learning beyond the Core and special programs, the nature of the degree will start to matter less than the degree itself, and the forgotten values of a liberal arts education might be realized again—hopefully this time more inclusively.

My impression is that there exist class barriers to realizing this vision that none of the professors I interviewed mentioned explicitly. In my research so far, I find that while the STEMM-Humanities co-teaching model at public universities seems to be relegated to specific programming (the model is more freely integrated across curricula at private schools), there is an inverse relationship between the wealth of the university and the

model's availability to all students. EF and his colleagues are free to dream up innovative curricular pairings as electives, ostensibly available to all students who can afford the school's pricey tuition, while GH's school reserves funding for interdisciplinary pedagogies for Honors students, or, in other words, the already upwardly mobile. She reported that she and her colleague "both got credit for teaching the seminar, even though it was low-enrolled and we did it together. Honors. That's where the money for innovation and interdisciplinarity is at [Institution]." GH's observation returns me to my grievance with *Staying with the Trouble*: we are in need of a Marxist critique of the systemic barriers to realizing the Chthulucene that Haraway envisions.

Still, Haraway writes with an urgency to breaking down the STEMM-Humanities divide. The oft-lamented crisis ascribed to the Humanities is suddenly a shared symptom of the instrumentalist university in the neofascist state. My colleagues are worried about saving the humanities. We talk a lot about that. We talk less about saving our planet. What if interdisciplinary education saves both? Since the myth of the unemployable and underpaid Humanities major has been debunked (see Anders; Grasgreen), we might consider a less self-referential and less internal crisis-driven argument for saving them. Several recent peer-reviewed articles and online listicles catalogue the reasons and ways to save the Humanities—some more obvious than others in their agendas⁴—whose premises now appear flawed and self-interested. But the enemy of my enemy is my friend.

If the human is at stake, the process of saving the human relies on relinquishing the exceptionalism that in the first phase inspired us to save ourselves. The romance of nature no longer abides, or in Haraway's words, "None of the parties in crisis can call upon Providence, History, Science, Progress, or any other god trick outside the common fray to resolve the troubles" (*Staying* 40). There will be no hero; "But still, we are in the story of the hero and the first beautiful words and weapons, not in the story of the carrier bag" (42). Haraway partially disavows Bruno Latour here, who proposes a way out of the destructive arc of history through the motif of war, a battle against absolutist concepts such as those itemized above. For Haraway, any war requires a binary enemy-hero story, of which there can be none; our troubles cannot be solved in the Anthropocene (43).

Nor can they be solved in the Capitalocene. Blaming capital for the earth's destruction still privileges man. Yet, "the infectious industrial revolution of England mattered hugely, but it is only one player in planet-transforming, historically-situated, new-enough, worlding relations. The relocation of peoples, plants, and animals; the leveling of vast forests; and the violent mining of metals preceded the steam engine; but that is not a warrant for wringing one's hands about the perfidy of the Anthropos, or of Species Man, or of Man the Hunter" (48). Man still executed the earth's destruction, but it is less about his inventions and more about the accoutrements of capital and globalization that treaded and turned over the earth. She proposes a less binaristic, less self-flagellatory (and hence, less self-congratulatory) awareness of earth's symbiosis. The Chthulucene is a space "neither sacred nor secular" (55), wherein we can allow for the reality that crit-

4. I am thinking, for instance, of Craig Klugman's "How Health Humanities Will Save the Life of the Humanities," in which Klugman cites the misleading statistic that Humanities majors make less money than their non-Humanities peers.

ters are “relentlessly opportunistic and contingent,” which in turn ushers in a kind of hope and then generative, innovative thinking about how we can start thinking-and being-with even the most single-celled among us. It is an impoverishment of thought to diminish the world to a vision of actor/human versus reactor/animal. She does not imagine the Capitalocene as our last chapter, or our last “biodiverse geological epoch” (49).

Clearly invoking Deleuze and Guattari, she illustrates Power/Capital as *not* a singular event with a single author/actor. Perhaps it is this new collaborative framework for thinking futurity that entails a new STEMM-Humanities think-tank infrastructure—at every level of educational institutions. Some might contend that Haraway’s methodology is so expansive as to be meaningless. She draws from assorted indigenous mythologies, pigeon behavior, microbiomes, coral, SF, and more. To what extent are her examples—ideas to “think-with”—diminished or even defamed in the process of modeling her vision? What would an indigenous scholar in Critical Race Studies think? A microbiologist, who has spent years carefully collating the actual stories microbes tell rather than the ones humans tell of them? Do the ends justify the means, if the lesson we internalize is that the human story must be deemphasized if we are to survive in the muck?

She calls us to make like squid and bacteria and work together across disciplines and methodologies (she seems especially keen on biology-Humanities pairings) and disparages “worried colleagues at conferences” (67), implying tenure requirements unnecessarily squelch innovative thinking toward the Humusities, which my field research supports. Quirkily, she in turn flaunts the venues that published the very paper in which she presents her argument, seemingly uninterested in the way her privilege as a white, Ivy, prolific, senior scholar heading an academic center that is expressly broad in scope intersects with her ability to do this kind of work. Let us as Humusities scholars supplement *Staying with the Trouble* with an interdisciplinary co-teaching program in pursuit of equity, and one that is ultimately in pursuit of a healthy public sphere.

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