

Anthropocene, Capitalocene, Chthulhucene

Donna Haraway in conversation with Martha Kenney

Since long before the recent interest in the Anthropocene, Donna Haraway has been concerned with the question of how to live well “on a vulnerable planet that is not yet murdered.”¹ One of our most vital thinkers on the politics of nature and culture (which she believes cannot and should not be separated), Haraway’s writing bristles with generosity, outrage, wit, and fierce intelligence. She has inspired generations of readers to think critically and creatively about how to live and work inside the difficult legacies of settler colonialism, industrial capitalism, and militarized technoscience.

This work of inheriting violent pasts and presents in the process of building more liveable worlds, Haraway argues, must be understood as a collective project composed of connections that are only partial, fraught with contradictions, disagreements, and refusals—and made up of mundane practices that are nevertheless consequential. She models this approach in her own writing, where she thinks with and through the work of fellow feminists, artists, activists, science fiction writers, biologists, and critters of all kinds. As this interview demonstrates, Haraway’s citation practice is interdisciplinary, multi-generational, and exuberant. She cites her own PhD advisor, ecologist G. Evelyn Hutchinson, as well as her former students Astrid Schrader, Eva Hayward, and Natalie Loveless. For Haraway, thinking, writing, and world-making are always the work of *sym-poiesis*, of making together.

These days, Haraway is committed to “staying with the trouble” in multispecies worlds where suffering and flourishing are unevenly distributed and always at stake. Worlds at stake—whether the decolonizing lands, animals, and peoples in the U.S. Southwest, or the vulnerable multicritter webs of coral reefs—are messy and always unfinished; but the necessary work of *sym-poiesis* promises new ways of going-on together.

I spoke with her at her home in Santa Cruz, California in December 2013; what follows is an edited transcription of our conversation.

Martha Kenney Your work has always been concerned with the possibilities for living and dying well on this planet, for humans and other earth-bound critters. What are some of the most urgent questions informing your current scholarship in the context of increasingly visible anthropogenic devastation?

Donna Haraway Well that's a big question. I think that I could do this by listing certain kinds of urgencies that I feel in my bones. We live in a time of mass extinctions and exterminations, including the genocides of other critters and of people.² We live and die in a time of permanent war, multi-species surplus killings, and genocides. Coupled to that, but distinct from it, is the urgency of climate change. We inhabit a planet that is undergoing systemic transformations, including the already-experienced ones and the anticipated flips of set points in geosystems, such that complex, biodiverse assemblages like coral reefs can undergo rapid and irreversible changes of state. Rich worlds crucial to human and nonhuman flourishing can and do disappear. Things can be very gradual, and then boom—systems changes mutate life and death radically and suddenly. Understanding that in the tissues of our flesh seems to me really urgent.

Related to this is the question of a human population of seven billion and counting; it is anticipated to be eleven billion by the end of this century. Eleven billion! The sheer number of people and the demands they/we make on the earth matter hugely. We need to be committed to working to radically reduce this obscene weight of reproduction, consumption, and production while helping to craft the will, imagination, and apparatuses for people and other critters to be better off as both a means and an end. Reducing human numbers must involve more social justice, more wealth, not less, the kinds of wealth that make for good living for billions of human beings in a living, diverse world; this commitment must be intrinsic to reducing human demands on the earth. Addressing the question of human beings within manufactured scarcity apparatuses, including the particular ones we are experiencing now in the so-called economic crisis with its various unjust austerity measures, is necessary. We are living in a period of intolerable extraction, unequal human deprivation, multispecies extinctions, and blasted ecosystems. Even so, it is also true that for the great bulk of people on this planet now hunger is actually less, disease is in retreat in many areas, and acute global poverty is reduced—which is unbelievable given the intensities of exploitation. How do you get back to two billion, which is about where the human population was shortly before I was born, and how do you do that while increasing justice and well-being in a multi-species way? I think that question gathers together most of the problems for me.

MK In your recent writing, you have used the term “response-ability” as one of the virtues that we need to cultivate in the context of these felt urgencies. Could you tell us what you mean by response-ability?

DH Like all of the words that feel vital in me now, these are words that come out of communities of practice; they are *sym-poietic* terminologies (made-together-with: *poiesis* as making, *sym* as together-with). These terms and ideas are made together with many other people. When I speak about response-ability, I feel Astrid Schrader, Karen Barad, and Vinciane Despret emerging to the foreground.³ I feel like I'm channelling as well as weaving, knotting, crocheting. Response-ability is that cultivation through which we render each other capable, that cultivation

of the capacity to respond. Response-ability is not something you have toward some kind of demand made on you by the world or by an ethical system or by a political commitment. Response-ability is not something that you just respond to, as if it's there already. Rather, it's the cultivation of the capacity of response in the context of living and dying in worlds for which one is for, with others. So I think of response-ability as irreducibly collective and to-be-made. In some really deep ways, that which is not yet, but may yet be. It is a kind of luring, desiring, making-with.

MK You have described your scholarship as an ongoing process of refiguring what counts as nature. What do you mean by figuration? And how do you feel that attention to the liveliness and deadliness of figures might help strengthen ecological response-ability?

DH I love words that just won't sit still, and once you think you've defined them it turns out they are like ship hulls full of barnacles. You scrape them off, but the larvae re-settle and spring up again. Figuring is a way of thinking or cogitating or meditating or hanging out with ideas. I'm interested in how figures help us avoid the deadly fantasy of the literal. Of course, the literal is another trope, but we're going to hold the literal still for a minute, as the trope of no trope. Figures help us avoid the fantasy of "the one true meaning." They are simultaneously visual and narrative as well as mathematical. They are very sensual.

I am interested particularly in string figures, in string games like cat's cradle—a game played on tentacles or digits of many kinds, like fingers and toes. Cat's cradle, as Isabelle Stengers pointed out, involves one set of digits or tentacles holding still long enough to receive a pattern passed by another set and then passing a mutated pattern back, so there is stillness and motion, giving and receiving, staying and moving. String figures are also old games; they show up all over the world. So they are an obvious figure for me in thinking about response-ability, feminist environmentalism, and science studies. String figures are SF games. SF games are science fiction, science fact, speculative fabulation, speculative feminism, *soin de ficelle*, so far (in that these games are ongoing and not finished). Connected to this is Ursula K. Le Guin's carrier bag theory of fiction, where storytelling is about collecting things up into a net, a bag, a shell, a recipient, or a hollow, for sharing. SF is full of old, important feminist figures.

There's another set of figures that I want to bring up here that are in a kind of Venn diagram relationship with string figures. They partly intersect, but they also pull against and are different. And that is tentacular figures. The tentacular ones, the tentacled ones, like jellyfish, extravagant marine worms, the Hawaiian bobtail squid, like the Ood in *Doctor Who*, like the Cthulhu in H.P. Lovecraft, like many things. I'm working a lot these days with the tentacular ones and with the face as a feeling, entwining, tentacular, negatively curving/waving hyperbolic surface. Medusa is my friend these days.

MK Why do you find yourself drawn to these tentacular figures?

DH Well, part of it has to do with what Eva Hayward gave us when she was paying

attention to coral reefs.⁴ She thinks about the haptic visual. She's interested in the way human beings studying coral reefs often work through visual technologies, visual apparatuses. She shows that visibility is also haptic; her term for this is "fingeryeyes." There is an incredible array of sensory apparatuses in the critters of the sea that Eva's interested in and that are especially important in global warming. So they are more than a metaphor for thinking about the way that human beings, while we are hugely visual, are visual in a haptic modality; vision can be figured as touch, not distance, as entwined with, or negatively curving in loops and frills, not surveying from above. For a long time, since before I wrote "The Cyborg Manifesto" and certainly in "Situated Knowledges," I was interested in reclaiming visibility as a becoming-with or being-with, as opposed to surveying-from. You can't walk away from important things like vision, you can't give them away; you must refigure, and then you discover that they are already deeply refigured and all you really have to do is re-inhabit.

MK I also love the word "feelers" for the tentacles, because none of our other organs say what they do... we don't have "seers" or "smellers."

DH Feelers are actually an action name. Think of Medusa. The snakes, of course, freeze the man who looks directly at them, but they are also feelers, the snakes are sensory apparatuses. Rusten Hogness pointed this out to me. They swirl...

MK ...and also that wonderful word that I learned from Eva—*tentacularity*—the ways that figures, stories, multi-sensory apparatuses reach out to their audience and enrol them...

DH ...and engulf them and sometimes sting them [*laughter*] because a lot of these tentacles have little poison sacks and darts on them; they are apparatuses of predation as well. These are not innocent figures; these are figures of living and dying, of risk and entanglement. These are figures for inhabiting attentively with response-ability.

MK There is always the question of who is enrolled by figures, who is enticed, who is scared. I am curious about the figure of the Anthropocene, how it reaches out and how it gathers. It has been very charismatic in enrolling people.

DH And fast!

MK What do you feel are the some of the possibilities and limitations of organizing our efforts around this figure of the Anthropocene?

DH Well, first, let me say something historical. The current use of the term Anthropocene dates to the year 2000, when it is used in a paper in a geology context. The term was coined by ecologist Eugene Stoermer and the Nobel-Prize-winning atmospheric chemist Paul Crutzen to refer to the influence of human behaviour on the earth's atmosphere, lithosphere, and hydrosphere in recent centuries, and has been proposed as a name for a geological epoch. But it has quickly become way bigger than that. It has been picked up by artists, humanists, politicians, scientists, and the popular press. The charismatic quality of the figure is worth staying-still

with. There's a need for a word to highlight the urgency of human impact on this planet, such that the effects of our species are literally written into the rocks. In the evidence for the current mass extinction "event," any geologist of the future will find the synthetic chemistry of DuPont in the composition of the rocks, will find in the hydrosphere the synthetic chemistry of multinational capital pharmaceutical and petrochemical corporations. The hydrosphere, lithosphere, atmosphere, everythingsphere, the multiple worldings of the earth will show the effect of the activities of industrial human beings. The need for a word for that, I think, is obvious, and accounts for a huge amount of popularity of the term.

I also think the term feeds into some extremely conventional and ready-to-the-tongue stories that need far more critical inquiry. The figure of the *anthropos* itself is a species term. The *anthropos*—what is that? *All of Homo sapiens sapiens? All of mankind? Well, who exactly?* Fossil-fuel-burning humanity is the first short answer to that. Industrial humanity, however, is still a kind of a species-being; it doesn't even speak to all of industrial humanity, but specifically the formations of global capital and global state socialisms. Very much a part of that are the exchange networks, the financial networks, extraction practices, wealth creations, and (mal)distributions in relation to both people and other critters. It would probably be better named the Capitalocene, if one wanted a single word. The mass extinction events are related to the resourcing of the earth for commodity production, the resourcing of everything on the earth, most certainly including people, and everything that lives and crawls and dies and everything that is in the rocks and under the rocks. We live in the third great age of carbon, in which we are witnessing the extraction of the last possible calorie of carbon out of the deep earth by the most destructive technologies imaginable, of which fracking is only the tip of the (melting) iceberg. Watch what's going on in the Arctic as the sea ice melts and the nations line up their war and mining ships for the extraction of the last calorie of carbon-based fuels from under the northern oceans. To call it the Anthropocene misses all of that; it treats it as if it's a species act. Well, it isn't a species act. So, if I had to have a single word I would call it the Capitalocene.

I'm not exactly against the figure of the Anthropocene, partly because it's already focusing people on something that needs urgent attention. Besides, the term can't be dislodged now, I don't think, even though it's recent. So I'm not against it, but I really want to complicate it.

The Anthropocene has had a conflicted etymological history. A number of experts think of *anthropos* as "the one who looks up from the earth," the one who is earth-bound, of the earth, but looking up, fleeing the elemental and abyssal forces, "astralized." "Human" is a better figure for our species, if we want a species word, because of its tie to humus, compost. Unlike *anthropos*, humus is not about looking up; it's about being hot. [Laughter] Beth Stephens and Annie Sprinkle have this little bumper sticker "compost is so hot," for one of their feminist ecosexual slogans. It's not post-human, but *com-post*. Katie King has been playing with the term

“composting humanities,” and Rusten Hogness came up with “humusities” to replace “humanities.” “Homo” needs to re-root in *humus*, not bliss out into an apocalyptic *anthropos*. Compost provides the figures for making multispecies public cultures, sciences, and politics now.

MK Maria Puig de la Bellacasa’s work on soil and the permaculture movement is really wonderful for thinking about compost and the Anthropocene.⁵ She critiques the figure of “crisis” and articulates the important difference between reacting to a crisis and creating sustainable relations across generations.

DH I think this is so deep in feminist environmentalism. The word “urgency,” rather than crisis, is an energetic term for me. Urgency is energizing, but it’s not about apocalypse or crisis. It’s about inhabiting; it’s about cultivating response-ability.

MK Since *The Companion Species Manifesto*, your own storytelling practice has been concerned with vital and deadly relations among organisms. You write about laboratory animals, agility sports, critter cams, sites where multi-species-becoming-with is the name of the game. How can telling these kinds of stories help us to learn how to *respond*, as Karen Barad puts it, within and as part of our more-than-human world?⁶

DH Multi-species-becoming-with, multi-species co-making, making-together, *sym-poiesis* rather than auto-poiesis. *Sym-poiesis* was coined originally in the late 1990s by Beth Dempster—a Canadian systems thinker—in her master’s thesis about landscape design and environmentalism.⁷ I keep having the need to cite; part of it is the need to not pose as original, but to re-member the collective, the compost pile that makes heat.

MK You’re performing *sym-poiesis*.

DH For me performing *sym-poiesis* or performing storying is also about constantly looping back and interrupting. I work to tell stories *sym-poietically* out of those things I really care about. And those things almost always involve non-human critters. They almost always involve scenes where biologies are intimately part of worlding, where naturecultures can’t be separated. So, it’s no surprise that I tell stories about the working and playing critters and got really, really interested in the becoming-with a dog who is my sports partner and the dog of my heart.

The training practices helped me rethink the evolutionary roots of the capacity for ethical reasoning. How do we think of evolutionary stories of our response-abilities, of our capacities to respond? Biologist Marc Bekoff developed this really wonderful theory that the roots of ethical possibilities, ethical response-ability, are in play.⁸ Critters respond to the meta-communicative apparatuses of play signaling, so that play can go on and remain inventive rather than turn into aggression or something else boringly functional. Because play is one of those activities through which critters make with each other that which didn’t exist before, it’s never merely functional; it is propositional. Play makes possible futures out of joyful but dangerous presents. Think of the way Stengers theorizes Whitehead’s propositions.⁹

Play proposes new abstractions, new lures. Marc didn't quite say all that, but I took what he gave me and told my stories with his; we played with each other. This is a *sym-poietic* telling of propositional stories about the origin of ethics—a string-figuring. It figures response-ability as becoming-with, and it's rooted in the riskiness of play. It's rooted in taking chances with one another, not in prohibition. Ethics is not primarily a rule-based activity, but a propositional, worlding activity.

If people start telling these kinds of stories around things that they care about—dogs, coral reefs, immigration, the problems of Israel-Palestine, the questions of permanent war in the Democratic Republic of Congo, or of desalination in Santa Cruz—if we really engage in storytelling as a *sym-poietic* practice, which is propositional and invitational, then we have a chance for re-worlding. Play always involves the invitation that asks “are we a ‘we’”? A “we” that doesn't pre-exist the propositional risk and testing. I think all the important problems involve this propositional, questioning, interrogative “we.”

MK There's also a pragmatics of storytelling and figuration at play: “Does *this* story work *here*”? What might be a wonderful figure in one context might not work, might not enrol, it might not have tentacularity, might not create the “we” in another. I think playfulness in this context is also an aesthetic playfulness, a playfulness of form, of genre, of style, a willingness to see what these things can *do*.

DH Yes! And let's face it: I love ideas. I think intellectual play is a blast, and I want to invite people into intellectual play rather than dump on it.

MK And to work against an understanding of scholarship as self-serious and final, rather than as a collective compost heap...

DH ...that generates heat and might get too hot. [*Laughter*] There is also another issue here about this mode of storytelling that has to do with history. You're never starting from scratch; the questions of how to inherit are always there. I'm consumed by the question of how to live with our inheritances, how not to disown them. We have many inheritances, so we need that kind of humility, the humility of never starting from scratch and never starting clean, as well as inheriting obligations we did not and cannot choose, but which we must respond to.

MK What kinds of figures and stories and propositions from others, from biologists, writers, and scholars, have you recently found promising around these questions of inheritance and response-ability?

DH Let's begin from within biology and consider ecological-evolutionary-developmental biology: eco-evo-devo. I've ended up making that into “eco-evo-devo-techno-histo-psycho,” ending with psycho to please my friends who need to think about subjectivity more than I do. I'm being facetious; adding “psycho” signals that I've gone off the deep-end, necessarily. Ecological-evolutionary-developmental biology stresses the symbiogenetic quality of all becoming-with that makes critters. I'm avoiding the word organism, because it has the appearance of being closed off at the boundaries. Biologist Scott Gilbert and colleagues have

started using “holobiont” and “holobiome” rather than “organism” and “environment” to signal the webbed multiplicities that make up any “one” in time and space.¹⁰

MK Could you define symbiogenesis for us?

DH Lynn Margulis took it from a Russian biologist who studied lichens, Konstantin Sergeevich Merezhkovsky, who coined the term in 1910. Margulis was, among other things, a scholar who actually read German. She then re-introduced symbiogenesis to refer to the origin of complex cellularity through which the prokaryotes in the world of bacteria—who need to eat in order to live—eat each other but get indigestion, that kind of partial eating but not digesting, that kind of coming together but not fully assimilating, whereby two become less than two but more than one, where number gets troubled and the complex modern cell originates through indigestion—or, in Marilyn Strathern’s term, “partial connections.”¹¹ It happens when things eat each other but are not fully assimilated. Sym: together-with; bio: the way living critters do it; and, genesis: this is the way the beginnings worked. These are connections that make cobbled-together, still-hungry-for-affiliation beings that can never be wholes. The origin of the modern cell is a symbiogenetic event.

Contemporary biologists are saying this isn’t just the origin of the modern cell, but that animal multi-cellularity is probably a symbiogenetic event. Take, for example, these single-celled critters with flagella that swim around in the water, choanoflagellates. One kind clumps when they’re infected with a certain strain of bacteria and when they clump they look and act like a sponge. If you take sponges apart, it turns out they have included bacteria that are absolutely fundamental to their being a sponge at all. It begins to look like the earliest moves of animal multi-cellularity were symbiogenetic events involving bacteria in and among nucleated cells. This is a terrible over-simplification of Nicole King’s elegant, experimental work at UC Berkeley, but you get a sense of how exciting these results are.¹²

How about developmental programs? The Hawaiian bobtail squid, which hunts at night, have bacteria associated with them that make light at night, so they look like starry skies from below. They crust sand over themselves on their backsides, so they look like a sandy bottom from above and like a starlit sky from below, so they’re really incredibly well camouflaged as they squirt their way around and capture their prey. It turns out their light organ, without which they couldn’t exist, is made not just from their genetic action, but requires the action of associated bacteria at a particular point in the development of the squid, so that to be a squid at all requires another set of organisms. So to be a one takes much more than one.

There are also entities that nest their genomes. For example, to make a protein it might take three separate species of critters that are nested inside of each other, partially assimilated and partly not, each having DNA that codes for different parts of the protein which they all need. You outsource part of your own genetic apparatus or you insource these multiple collaborations of entities in order to make things what they are. Call that symbiogenesis, origins of the



Crocheted hyperbolic plane by Dr. Daina Taimina; photo courtesy of Institute For Figuring.

Fig. 01

cells, origins of multi-cellularity, developmental programs, nested genomes, all of this and more. Holobionts are entities appropriate to symbiogenesis and appropriate to the worlding not well named by the figures of the Anthropocene. **MK** Along with the biologists and feminists that we have been talking about, how do you see artists participating in what Anna Tsing calls “the arts of living on a damaged planet”?¹³

DH My own practice for a long time has involved thinking with artists in the tissue of their work—artists like Kathy High, Beatriz Da Costa, or Natalie Jeremijenko. I’m extremely interested in the artists who work in multi-species complexities, and who work with them propositionally, in collective practice, in performance art. Natalie Loveless taught me so much about performance and performativity, and about thinking and making together.¹⁴ Working with artists has become more and more essential to my material practice, and clearly included among artists are writers. I think the first artists I worked with in intimate detail were writers, primarily science-fiction writers. When I was a graduate student studying with Evelyn Hutchinson, who wrote that beautiful book *Kindly Fruits of the Earth, An Introduction to Population Ecology*, as well as “Circular Causal Systems in Ecology,” “Homage to Santa Rosalia,” and so many other things, he had us reading C. H. Waddington and pondering the importance of painting in his thinking about genetic assimilation and developmental plateaus.¹⁵ Our thinking about ecology, evolution, and genetics in the 1960s, when I was a graduate student, already involved some serious consideration of modernist painting, as well as modernist poetry. We talked about all this in our biology tea groups; our lab group meetings involved thinking about philosophy, biology, art. I was really lucky to be part of an educational scene

that took for granted that artistic practice is intrinsic and necessary to good thinking and to good science. Most biology research groups at Yale, then and now, were not like that, but my favourite biologists, like Scott Gilbert and Mike Hadfield, are like that.

So, our example—the one that you and I wanted to talk about, because it ties up so closely with both string figuring and tentacularity—is the Hyperbolic Crochet Coral Reef Project at the Institute for Figuring (IFF) in Los Angeles, where they have play tanks rather than work tanks. Margaret and Christine Wertheim are deliberately setting themselves off in a serious, joking relation to the Rand Corporation and their think tanks. Evelyn Hutchinson would have loved the IFF!

One of the streams of inspiration for the project comes from Margaret Wertheim's training in mathematics. She became interested in the ideas of mathematician Daina Taimina, who proposed the crocheted figure as a model for hyperbolic space. Mathematicians had material models for studying Euclidean spatialities, but hyperbolic, non-Euclidean space didn't have good material models until Taimina proposed crocheting. Margaret wrote a book called *A Field Guide to Hyperbolic Space*, in which she details the mathematical history.¹⁶ By the way, if you buy red leaf lettuce or if you look at the structure of a coral reef: hyperbolic forms. They are everywhere. Remember, too, "A Non-Euclidean View of California as a Cold Place to Be," Ursula Le Guin's instructions for reading her looped and frilled novel, *Always Coming Home*.¹⁷

MK In the early twentieth century, non-Euclidean geometry was so unimaginable that H. P. Lovecraft used "non-Euclidean" alongside a host of other terrifying adjectives to describe the ancient and horrible realm of Cthulhu, yet here we're finding these forms in crochet. So, the other-worldly, even the terrifyingly other-worldly, turns out to be mundane.

DH And mundane in a very particular way, namely, as part of women's fibre arts. This is important to Margaret and Christine Wertheim, who foreground the feminist aspects of women's fibre arts, the collective and *sym-poetic* aspects of fibre arts, the mathematics, the ecological activism of bringing more than 7,000 people together in 25 globally distributed locations to crochet a coral reef to think with, become with, work with in a time of extinctions and exterminations. They explore the facts of the already-in-place inevitability of some extinctions, but also the opening to prevent at least some damage and to restore and rehabilitate partially. This is not a project of melancholy and mourning. Theirs are figures of response-ability. The crochet coral reef project is a materialization of response-ability, of cultivating, of caring with and for coral reefs and their situated critters, including people. So, thousands of women, as well as children and men, old and young, are participating in crocheting these reefs that are then produced as installations in all sorts of places. By proposing fundamental questions about extinction and survival and response through material figuring, both the crocheting and the installations create publics that learn to care, to make a difference.



Coral Forest - Plastic. Coral sculptures crocheted from plastic bags and other plastic detritus. Constructed by Christine Wertheim. Photo by Margaret Wertheim; courtesy of IFF Archive.

Fig. 02

They also crochet these reefs from trash. The reef that is especially affectively and politically powerful for me is the toxic coral reef, which is made out of thrown-away plastic trash. The Wertheims are interested in the Pacific gyre—the great plastic garbage patch in the ocean—and the excess death caused by plastic pollution.¹⁸ So the only reefs that they allow to grow indefinitely are those that are made of trash; other reefs have limits, even the two heart-rending bleached reefs delicately crocheted from mostly white yarns by some of their most skilled collaborators. The Wertheims have a fantasy/nightmare project going now where some of the crocheting is done with old reel-to-reel tape and all kinds of industrial cast-offs that get crocheted into critters made of the trash that chokes the earth. There is amazing beauty to these pieces, a kind of inhabiting the possibility of a future out of a haunted past. It's beautiful and ugly; I think they are deliberately working with these multiple modalities.

MK Do the crochet coral reefs mimic natural forms or are these fantasy organisms?

DH In the case of the “Coral Fantasies” work, these are fantasy organisms. In their Hawaiian Coral Reef Project, there are certain rules for people who want to play in this play tank. One of the rules is that you need to be crocheting or stitching together or making with fibre. There is some appliqué as well as crochet, but crocheting is the main thing. The crocheted critters have to be endemic Hawaiian species, so the Hawaiian coral reef is all critters who belong there. Hawaii, an island ecosystem at the heart of the history of colonialism and empire, has vast numbers of introduced species and many extinctions of endemics. So, with the Hawaiian coral reef, you are crocheting an imagined world full only of natural belonging, itself a troubling

colonial fantasy, but also an indictment of extreme—and undeniable—destruction and dislocations.

MK That's what's interesting about it; it's not that the real reefs and the fantasy reefs are different projects, but the real and the fantasy exist in different measures in different exhibitions.

DH And then there's just the sheer beauty. The Wertheims are very careful about attribution, and I was surprised and delighted to find out that the science-fiction writer Vonda McIntyre was one of the early and ongoing contributors of crocheted coral figures. McIntyre's SF worlds figure the atmosphere and the oceans as fluids; her entities inhabit the watery seas and rivers of airs, so no wonder she was drawn to the crochet coral reef project. She's also very much part of feminism, environmentalism, and the narrating practices of feminist SF.¹⁹

MK Which is another traditionally feminine handicraft.

DH Exactly right. One of the practices of feminists across the generations is to always remember what we've inherited from those who went before, so that those who come after, can, in Deborah Bird Rose's thinking about country in an Australian context, inherit more quiet country.²⁰ So that those who come after can live in less blasted country.

MK One of the threads that has gone through our discussion so far is the question of making practices: crocheting, storytelling, figuration...

DH ...remembering that *poiesis* itself translates into making...

MK ...and the Latin for making is *ingere*. Fingers and figures and fiction come from *ingere*, so these fictions, these makings, are both real and consequential.

DH Fact is a past participle of *facere*, another Latin word for making. A fact is that which has been made, and they are precious.

MK ...but they are not uncontestable, they've been stabilized...

DH ...and they can be destabilized. Some of our facts need protection, nurture, and care; other facts should be undone. But facts do not, and should not, exit the zone of care. Facts require response-abilities.

MK What are some of the figures that you've been working with in your own play tank in this context of the Anthropocene?

DH I'm not sure that I myself have drawn original figures; I've adopted figures.

MK I think we always adopt figures.

DH We always adopt figures; besides, I am into adoption, not reproduction. I'm into poly-parenting and adoption rather than generating one's own offspring. The many-fingered ones capture me; I am consumed, partially digested, remade within tentacularities. I have been working extensively with the tentacularities of

coral reefs. I've also been figuring with spiders, like *Pimona cthulhu*. "Pimona" is a Utah Gosiute word for long legs. I like the worldliness of the leggy Greek-Native American Gosiute chimera, which captures its prey in Sonoma and Mendocino County redwood forests far from Utah or the Mediterranean. This is not the Navajo's Spider Old-Woman, but her spinnerets extrude a non-innocent welcome, too. The naturalist who named this California spider chose "Cthulhu" for H. P. Lovecraft's monster deity who terrified men. I want this spider renamed, instead, for "chthonic" ones, a litter of the tentacular dreadful without gender. *Pimona chthulhu*, not *Pimona cthulhu*. I've been co-habiting with the chthonic ones, the sym-chthonic ones, who become with each other in and from the slimy mud and brine, in tangled temporalities that evade binaries like modern and traditional. I'm working with string figures a lot, for example, with the convergence and divergence of Navajo/Diné string figures called Na'at'lo and Euro-American cat's cradle, the ways that both tell the same stories and also tell very different stories. I am intrigued by the question of who owns stories. Some peoples don't get to own their stories; the question of sovereignties comes up. In my lectures and in my work in general, I try hard to have a thread of vexed questions of indigeneity in play—thinkers like Kim TallBear and James Clifford help me do that.

MK So let's talk about the chthonic ones, specifically Medusa.

DH The reason the Ood of *Doctor Who* have been figuring for me is because their faces are tentacular. Since human beings are often proposed as facial because of the eyes, what happens when the faciality is tentacular, not ocular? Then there is Medusa, whose head is tentacular and snaky. Medusa is a Gorgon, of whom there are three and only one is mortal—Medusa. And she is killed in a murder-for-hire instigated by Athena. Medusa's body is decapitated, her head drips blood, and out of that blood sprang the coral gorgone reefs of the Western Sea, onto which the ships of the hero-explorers are dashed. So, her blood generates the coral reef—Eva Hayward pointed that out to me. From her decapitated body springs Pegasus, the winged horse, and of course feminists have big stakes in horses. So I'm interested in the figure of Medusa as a tentacular, Gorgonic figure full of feely snakes, who threatens the children of Zeus, most certainly including the head-born daughter of Zeus, Athena. The head-born daughter is not a feminist—quite the opposite.

The Gorgons are also ambiguous about gender. They are earlier than, or other than, Chaos. Gaia/Terra are offspring of Chaos, and they don't really have a gender, despite their iconography as goddesses; Bruno Latour emphasizes this. Gaia is not he or she, but *it*. They are forces of generativity, vitality, and destruction. But the dreadful ones are even more powerful. The Gorgons are dreadful—the word *gorgones* translates as dreadful. I think the abyssal and elemental dreadful ones are the figures that we need to inhabit in these moments of urgency which we tried to sketch at the beginning of our conversation, this living in a time of excess mass death, much of it human-induced.

MK It strikes me that outside the frontier epistemologies of discovery and conquest,

Medusa and Cthulhu and the Ood aren't so terrible or terrifying. The non-Euclidean horrors that Lovecraft feared lurked beneath the sea—they were there. And they were these (potentially) solar-powered sea slugs that fascinated Margulis, and these mucous secreting corals that are now at risk of extinction, and they are not horrible, although they are definitely slimy. So outside the hero story...

DH ...they are not terrible, they are not so dreadful—except to “those who (only) look up.”²¹

MK What narrative work do you hope that these chthonic figures will do when enrolled to remediate the fallout of techno-scientific progress—remediate as both remedy and to re-mediate?

DH I like that. They're medicine, they're *curare*, they are poison and cure. Outside the techno-hero story, inside the carrier-bag story, they are not so terribly dreadful, but they also aren't safe; they are not “us.” So we're no longer looking at the apocalyptic, dreadful other that Athena fears and needs to slay; we're looking at the earth that's made of concatenated differences. We are looking at the holobiont that is Gaia, Terra, Medusa; and, of course, we're just doing Western stories here; there many other stories, like those of the now world-famous Incan Pachamama—sisters and *not* sisters of Egyptian Gorgones, Greek Gaia, Wiccan Terra, Yoruban Oya, or Navajo Spider Old-Woman, much less the leggy Pimoa. The remediation I lust for is about re-inhabiting the ordinary and re-inhabiting it with response-ability. When we tell the parabolic and spiked tales of tragic detumescence, tales of the Modern and the Traditional, we get off easy. We don't have to do a thing. We are not urged to action, we aren't urged to caring, we aren't urged to decomposition and recomposition. I want non-Euclidean ruffled tales, studded with tentacles for risky tangling. Ongoing caring requires that we work with figures of re-mediation that are risky and also fun, that we work, play, live, die, that we are at risk *with* and *as* mortal critters, that we don't give in to the techno-tragic story of self-made final death of the Anthropocene, but that we do inhabit the realities of excess mass death so as to learn to repair, and maybe even flourish without denial.

MK To return to play, I was playing around with the figure of the Ood, because *Doctor Who* is fun and it's good to think with. The Ood are particularly good figures for the Anthropocene because of their biological vulnerability. They have these hind-brains that are outside of their bodies, attached by a kind of umbilical cord. In addition to the hind-brain, they are connected telepathically to a collective brain. This is what makes them vulnerable to colonization and enslavement by the humans who lobotomize them; when they cut off their hind-brains, they cut them off psychologically from their collective consciousness. In fields like epigenetics and microbiome research, we are hearing new stories about the human body, not as a citadel, but as something porous and vulnerable to exposures. The world passes through us and we are not unchanged. I was wondering what the Ood, who are born with their brains in their hands, can teach us about these sorts of uneven landscapes of exposure that cut us off from what sustains us, and also what practices of resilience...

DH ...and how dangerous they become when they are enslaved.

MK It's the opposite of the Lovecraft story: they're not the horrible monster lying in wait.

DH They are made the enemy when they are enslaved.

MK It's our exploration and exploitation that's the horrible thing.

DH You could say that about techno-humanism: that we make ourselves the enemy when we enslave ourselves to the heroic-tragic man-makes-himself story. When we cut ourselves off from our collective, our becoming-with, including dying and becoming compost again. When we cut ourselves off from mortality and fear death, we become our own worst enemy in this relentless story of making ourselves in the image of death. These are the lived stories of the Anthropocene as Capitalocene. But there's a third story, or actually myriad stories. The *Chthulucene* probably won't catch on because not enough people know the word. But the Chthulucene would be truer. I am resigned to the term Anthropocene; I'm not going to be abstemious, and I'm not going to play purity games here. But, if only we had not started with that term... What if we had started instead by renaming our epoch, even—especially—in the Geophysical Union, with *sym-poietic* power, to signal the ongoing and non-Euclidean net bag of the Chthulucene, a story of SF, speculative fabulation, speculative feminism, scientific fact, string figures, so far? This unfinished Chthulocene must collect up the trash of the Anthropocene, the exterminism of the Capitalocene, and make a much hotter compost pile for still possible pasts, presents, and futures.

Notes

- 1 Donna Haraway, "Sowing Worlds: A Seed Bag for Terraforming with Earth Others," in *Beyond the Cyborg: Adventures with Donna Haraway*, ed. Margaret Grebowicz and Helen Merrick (New York: Columbia University Press, 2013), 137.
- 2 Ed. note: for an especially compelling discussion of mass extinction, see Elizabeth Kolbert, *The Sixth Extinction: An Unnatural History* (New York: Henry Holt and Company, 2014).
- 3 See, for example: Astrid Schrader, "Responding to *Pfiesteria piscicida* (the Fish Killer): Phantomatic Ontologies, Indeterminacy, and Responsibility in Toxic Microbiology," *Social Studies of Science* 40, no. 2 (April 2010): 275–306; Vinciane Despret, "The Body We Care For: Figures of Anthro-zoo-genesis," *Body & Society* 10, no. 2–3 (2004): 111–134; and Karen Barad, "On Touching—The Inhuman that Therefore I Am," *differences* 23, no. 3 (2012): 206–223.
- 4 Eva Hayward, "Fingeryeyes: Impressions of Cup Corals," *Cultural Anthropology* 25, no. 4 (November 2010): 577–599.
- 5 Maria Puig de la Bellacasa, "Soil Times: Notes on Caring Temporalities," Unpublished Manuscript.
- 6 Karen Barad, *Meeting the Universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning* (Durham: Duke University Press, 2007), 37.
- 7 Beth Dempster, "A Self-Organizing Systems Perspective on Planning for Sustainability,"

- (master's thesis, University of Waterloo, 1998).
- 8 Marc Bekoff, *The Emotional Lives of Animals* (Novato, California: New World Library, 2007).
 - 9 Isabelle Stengers, *Thinking with Whitehead: A Free and Wild Creation of Concepts*, trans. Michael Chase (Cambridge: Harvard University Press, 2011).
 - 10 See, for example, Scott Gilbert, Jan Sapp, and Alfred I. Tauber, "A Symbiotic View of Life: We Have Never Been Individuals," *The Quarterly Review of Biology* 87 no. 4 (December 2012): 325–341.
 - 11 See for example: Lynn Margulis, *Symbiotic Planet: A New Look at Evolution* (Amherst: Sciencewriters, 1998); Marilyn Strathern, *Partial Connections* (Walnut Creek, California: AltaMira Press, 2004).
 - 12 Rosanna Alegado, Laura Brown, Shugeng Cao, Renee Dermenjian, Richard Zuzow, Stephen Fairclough, Jon Clardy and Nicole King, "Bacterial Regulation of Colony Development in the Closest Living Relatives of Animals," *eLife* 1, no. e00013 (2012): elifesciences.org/content/1/e00013.
 - 13 This is a reference to Anna Tsing's conference at UCSC in May 2014, *Anthropocene: Arts of Living on a Damaged Planet*.
 - 14 Natalie Loveless, "Acts of Pedagogy: Feminism, Psychoanalysis, Art and Ethics," (PhD diss., University of California Santa Cruz, 2010).
 - 15 See Evelyn Hutchinson, *An Introduction to Population Ecology* (New Haven: Yale University Press, 1978), and C. H. Waddington, *Principles of Development and Differentiation* (New York: Macmillan, 1966).
 - 16 Margaret Wertheim, *A Field Guide to Hyperbolic Space: An Exploration of the Intersection of Higher Geometry and Feminine Handicraft* (Los Angeles: Institute for Figuring, 2007).
 - 17 Ursula K. Le Guin, *Always Coming Home* (Oakland: University of California Press, 2011).
 - 18 See: en.wikipedia.org/wiki/Great_Pacific_garbage_patch.
 - 19 Vonda N. McIntyre, *Superluminal* (New York: Houghton Mifflin, 1983).
 - 20 Deborah Bird Rose, *Reports from a Wild Country: Ethics for Decolonization* (Kensington: University of New South Wales Press, 2004).
 - 21 As one of its many possibilities, the Greek word *Anthropos* means "the upward looking one" (www.wordnik.com/words/Anthropos).