

Introduction

Trouble is an interesting word. It derives from a thirteenth-century French verb meaning “to stir up,” “to make cloudy,” “to disturb.” We—all of us on Terra—live in disturbing times, mixed-up times, troubling and turbid times. The task is to become capable, with each other in all of our bumptious kinds, of response. Mixed-up times are overflowing with both pain and joy—with vastly unjust patterns of pain and joy, with unnecessary killing of ongoingness but also with necessary resurgence. The task is to make kin in lines of inventive connection as a practice of learning to live and die well with each other in a thick present. Our task is to make trouble, to stir up potent response to devastating events, as well as to settle troubled waters and rebuild quiet places. In urgent times, many of us are tempted to address trouble in terms of making an imagined future safe, of stopping something from happening that looms in the future, of clearing away the present and the past in order to make futures for coming generations. Staying with the trouble does not require such a relationship to times called the future. In fact, staying with the trouble requires learning to be truly present, not as a vanishing pivot between awful or edenic pasts and apocalyptic or salvific futures, but as mortal critters entwined in myriad unfinished configurations of places, times, matters, meanings.¹

Chthulucene is a simple word.² It is a compound of two Greek roots (*khthôn* and *kainos*) that together name a kind of timeplace for learning to stay with the trouble of living and dying in response-ability on a damaged earth. *Kainos* means now, a time of beginnings, a time for ongoing, for freshness. Nothing in *kainos* must mean conventional pasts, presents, or futures. There is nothing in times of beginnings that insists on wiping out what has come before, or, indeed, wiping out what comes after. *Kainos* can be full of inheritances, of remembering, and full of comings, of nurturing what might still be. I hear *kainos* in the sense of thick, ongoing presence, with hyphae infusing all sorts of temporalities and materialities.

Chthonic ones are beings of the earth, both ancient and up-to-the-minute. I imagine chthonic ones as replete with tentacles, feelers, diggers, cords, whiptails, spider legs, and very unruly hair. Chthonic ones romp in multicritter humus but have no truck with sky-gazing Homo. Chthonic ones are monsters in the best sense; they demonstrate and perform the material meaningfulness of earth processes and critters. They also demonstrate and perform consequences. Chthonic ones are not safe; they have no truck with ideologues; they belong to no one; they writhe and luxuriate in manifold forms and manifold names in all the airs, waters, and places of earth. They make and unmake; they are made and unmade. They are who are. No wonder the world's great monotheisms in both religious and secular guises have tried again and again to exterminate the chthonic ones. The scandals of times called the Anthropocene and the Capitalocene are the latest and most dangerous of these exterminating forces. Living-with and dying-with each other potently in the Chthulucene can be a fierce reply to the dictates of both Anthropos and Capital.

Kin is a wild category that all sorts of people do their best to domesticate. Making kin as oddkin rather than, or at least in addition to, godkin and genealogical and biogenetic family troubles important matters, like to whom one is actually responsible. Who lives and who dies, and how, in this kinship rather than that one? What shape is this kinship, where and whom do its lines connect and disconnect, and so what? What must be cut and what must be tied if multispecies flourishing on earth, including human and other-than-human beings in kinship, are to have a chance?

An ubiquitous figure in this book is SF: science fiction, speculative fabulation, string figures, speculative feminism, science fact, so far. This reiterated list whirls and loops throughout the coming pages, in words

and in visual pictures, braiding me and my readers into beings and patterns at stake. Science fact and speculative fabulation need each other, and both need speculative feminism. I think of SF and string figures in a triple sense of figuring. First, promiscuously plucking out fibers in clotted and dense events and practices, I try to follow the threads where they lead in order to track them and find their tangles and patterns crucial for staying with the trouble in real and particular places and times. In that sense, SF is a method of tracing, of following a thread in the dark, in a dangerous true tale of adventure, where who lives and who dies and how might become clearer for the cultivating of multispecies justice. Second, the string figure is not the tracking, but rather the actual thing, the pattern and assembly that solicits response, the thing that is not oneself but with which one must go on. Third, string figuring is passing on and receiving, making and unmaking, picking up threads and dropping them. SF is practice and process; it is becoming-with each other in surprising relays; it is a figure for ongoingness in the Chthulucene.

The book and the idea of “staying with the trouble” are especially impatient with two responses that I hear all too frequently to the horrors of the Anthropocene and the Capitalocene. The first is easy to describe and, I think, dismiss, namely, a comic faith in technofixes, whether secular or religious: technology will somehow come to the rescue of its naughty but very clever children, or what amounts to the same thing, God will come to the rescue of his disobedient but ever hopeful children. In the face of such touching silliness about technofixes (or techno-apocalypses), sometimes it is hard to remember that it remains important to embrace situated technical projects and their people. They are not the enemy; they can do many important things for staying with the trouble and for making generative oddkin.

The second response, harder to dismiss, is probably even more destructive: namely, a position that the game is over, it's too late, there's no sense trying to make anything any better, or at least no sense having any active trust in each other in working and playing for a resurgent world. Some scientists I know express this kind of bitter cynicism, even as they actually work very hard to make a positive difference for both people and other critters. Some people who describe themselves as critical cultural theorists or political progressives express these ideas too. I think the odd coupling of actually working and playing for multispecies flourishing with tenacious energy and skill, while expressing an explicit “game over” attitude that can and does discourage others, including students,

is facilitated by various kinds of futurisms. One kind seems to imagine that only if things work do they matter—or, worse, only if what I and my fellow experts do works to fix things does anything matter. More generously, sometimes scientists and others who think, read, study, agitate, and care know too much, and it is too heavy. Or, at least we think we know enough to reach the conclusion that life on earth that includes human people in any tolerable way really is over, that the apocalypse really is nigh.

That attitude makes a great deal of sense in the midst of the earth's sixth great extinction event and in the midst of engulfing wars, extractions, and immiserations of billions of people and other critters for something called “profit” or “power”—or, for that matter, called “God.” A game-over attitude imposes itself in the gale-force winds of feeling, not just knowing, that human numbers are almost certain to reach more than 11 billion people by 2100. This figure represents a 9-billion-person increase over 150 years from 1950 to 2100, with vastly unequal consequences for the poor and the rich—not to mention vastly unequal burdens imposed on the earth by the rich compared to the poor—and even worse consequences for nonhumans almost everywhere. There are many other examples of dire realities; the Great Accelerations of the post-World War II era gouge their marks in earth's rocks, waters, airs, and critters. There is a fine line between acknowledging the extent and seriousness of the troubles and succumbing to abstract futurism and its affects of sublime despair and its politics of sublime indifference.

This book argues and tries to perform that, eschewing futurism, staying with the trouble is both more serious and more lively. Staying with the trouble requires making oddkin; that is, we require each other in unexpected collaborations and combinations, in hot compost piles. We become-with each other or not at all. That kind of material semiotics is always situated, someplace and not noplacé, entangled and worldly. Alone, in our separate kinds of expertise and experience, we know both too much and too little, and so we succumb to despair or to hope, and neither is a sensible attitude. Neither despair nor hope is tuned to the senses, to mindful matter, to material semiotics, to mortal earthlings in thick copresence. Neither hope nor despair knows how to teach us to “play string figures with companion species,” the title of the first chapter of this book.

Three long chapters open *Staying with the Trouble*. Each chapter tracks stories and figures for making kin in the Chthulucene in order to cut

the bonds of the Anthropocene and Capitalocene. Pigeons in all their worldly diversity—from creatures of empire, to working men’s racing birds, to spies in war, to scientific research partners, to collaborators in art activisms on three continents, to urban companions and pests—are the guides in chapter 1.

In their homely histories, pigeons lead into a practice of “tentacular thinking,” the title of the second chapter. Here, I expand the argument that bounded individualism in its many flavors in science, politics, and philosophy has finally become unavailable to think with, truly no longer thinkable, technically or any other way. *Sympoiesis*—making-with—is a keyword throughout the chapter, as I explore the gifts for needed thinking offered by theorists and storytellers. My partners in science studies, anthropology, and storytelling—Isabelle Stengers, Bruno Latour, Thom van Dooren, Anna Tsing, Marilyn Strathern, Hannah Arendt, Ursula Le Guin, and others—are my companions throughout tentacular thinking. With their help, I introduce the three timescapes of the book: the Anthropocene, the Capitalocene, and the Chthulucene. Allied with the Pacific day octopus, Medusa, the only mortal Gorgon, figured as the Mistress of the Animals, saves the day and ends the chapter.

“Symbiogenesis and the Lively Arts of Staying with the Trouble,” chapter 3, spins out the threads of *sympoiesis* in ecological evolutionary developmental biology and in art/science activisms committed to four iconic troubled places: coral reef holobiomes, Black Mesa coal country in Navajo and Hopi lands and other fossil fuel extraction zones impacting especially ferociously on indigenous peoples, complex lemur forest habitats in Madagascar, and North American circumpolar lands and seas subject to new and old colonialisms in the grip of rapidly melting ice. This chapter makes string figures with the threads of reciprocating energies of biologies, arts, and activisms for multispecies resurgence. Navajo-Churro sheep, orchids, extinct bees, lemurs, jellyfish, coral polyps, seals, and microbes play leading roles with their artists, biologists, and activists throughout the chapter. Here and throughout the book, the sustaining creativity of people who care and act animates the action. Not surprisingly, contemporary indigenous people and peoples, in conflict and collaboration with many sorts of partners, make a sensible difference. Biologists, beginning with the incomparable Lynn Margulis, infuse the thinking and playing of this chapter.

“Making Kin,” chapter 4, is both a reprise of the timescapes of Anthropocene, Capitalocene, and Chthulucene, and a plea to “Make Kin

Not Babies.” Antiracist, anticolonial, anticapitalist, proqueer feminists of every color and from every people have long been leaders in the movement for sexual and reproductive freedom and rights, with particular attention to the violence of reproductive and sexual orders for poor and marginalized people. Feminists have been leaders in arguing that sexual and reproductive freedom means being able to bring children, whether one’s own or those of others, to robust adulthood in health and safety in intact communities. Feminists have also been historically unique in insisting on the power and right of every woman, young or old, to choose *not* to have a child. Cognizant of how easily such a position repeats the arrogances of imperialism, feminists of my persuasion insist that motherhood is not the telos of women and that a woman’s reproductive freedom trumps the demands of patriarchy or any other system. Food, jobs, housing, education, the possibility of travel, community, peace, control of one’s body and one’s intimacies, health care, usable and woman-friendly contraception, the last word on whether or not a child will be born, joy: these and more are sexual and reproductive rights. Their absence around the world is stunning. For excellent reasons, the feminists I know have resisted the languages and policies of population control because they demonstrably often have the interests of biopolitical states more in view than the well-being of women and their people, old and young. Resulting scandals in population control practices are not hard to find. But, in my experience, feminists, including science studies and anthropological feminists, have not been willing seriously to address the Great Acceleration of human numbers, fearing that to do so would be to slide once again into the muck of racism, classism, nationalism, modernism, and imperialism.

But that fear is not good enough. Avoidance of the urgency of almost incomprehensible increases in human numbers since 1950 can slip into something akin to the way some Christians avoid the urgency of climate change because it touches too closely on the marrow of one’s faith. *How* to address the urgency is the question that must burn for staying with the trouble. What is decolonial feminist reproductive freedom in a dangerously troubled multispecies world? It cannot be just a humanist affair, no matter how anti-imperialist, antiracist, anticlassist, and pro-woman. It also cannot be a “futurist” affair, attending mainly to abstract numbers and big data, but not to the differentiated and layered lives and deaths of actual people. Still, a 9 billion increase of human beings over 150 years, to a level of 11 billion by 2100 if we are lucky, is not just

a number; and it cannot be explained away by blaming Capitalism or any other word starting with a capital letter. The need is stark to think together anew across differences of historical position and of kinds of knowledge and expertise.

“Awash in Urine,” chapter 5, begins with personal and intimate relations, luxuriating in the consequences of following estrogens that connect an aging woman and her elder dog, specifically, me and my companion and research associate Cayenne. Before the threads of the string figure have been tracked far, remembering their cyborg littermates, woman and dog find themselves in histories of veterinary research, Big Pharma, horse farming for estrogen, zoos, DES feminist activism, interrelated animal rights and women’s health actions, and much more. Intensely inhabiting specific bodies and places as the means to cultivate the capacity to respond to worldly urgencies with each other is the core theme.

Ursula K. Le Guin, Octavia Butler, and ants and acacia seeds populate chapter 6, “Sowing Worlds.” The task is to tell an SF adventure story with acacias and their associates as the protagonists. It turns out that Le Guin’s carrier bag theory of narrative comes to the rescue, along with biologist Deborah Gordon’s theories about ant interactions and colony behavior, to elaborate the possibilities of ecological evolutionary developmental biology and nonhierarchical systems theories for shaping the best stories. Science fiction and science fact cohabit happily in this tale. With Le Guin as their scribe, the prose of acacia seeds and the lyrics of lichens give way to the mute poetics of rocks in the final passages.

“A Curious Practice,” chapter 7, draws close to the philosopher, psychologist, animal-human student, and cultural theorist Vinciane Despret because of her incomparable ability to think-with other beings, human or not. Despret’s work on attunement and on critters rendering each other capable of unexpected feats in actual encounters is necessary to staying with the trouble. She attends not to what critters are supposed to be able to do, by nature or education, but to what beings evoke from and with each other that was truly not there before, in nature or culture. Her kind of thinking enlarges the capacities of all the players; that is her worlding practice. The urgencies of the Anthropocene, Capitalocene, and Chthulucene demand that kind of thinking beyond inherited categories and capacities, in homely and concrete ways, like the sorts of things Arabian babblers and their scientists get up to in the Negev desert. Despret teaches how to be curious, as well as how to mourn by

bringing the dead into active presence; and I needed her touch before writing the concluding stories of *Staying with the Trouble*. Her curious practice prepared me to write about the Communities of Compost and the tasks of speakers for the dead, as they work for earthly multispecies recuperation and resurgence.

“The Camille Stories: Children of Compost” closes this book. This invitation to a collective speculative fabulation follows five generations of a symbiogenetic join of a human child and monarch butterflies along the many lines and nodes of these insects’ migrations between Mexico and the United States and Canada. These lines trace socialities and materialities crucial to living and dying with critters on the edge of disappearance so that they might go on. Committed to nurturing capacities to respond, cultivating ways to render each other capable, the Communities of Compost appeared all over the world in the early twenty-first century on ruined lands and waters. These communities committed to help radically reduce human numbers over a few hundred years while developing practices of multispecies environmental justice of myriad kinds. Every new child had at least three human parents; and the pregnant parent exercised reproductive freedom in the choice of an animal symbiont for the child, a choice that ramified across the generations of all the species. The relations of symbiogenetic people and unjoined humans brought many surprises, some of them deadly, but perhaps the deepest surprises emerged from the relations of the living and the dead, in symanimagenic complexity, across the holobiomes of earth.

Lots of trouble, lots of kin to be going on with.