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Revisiting a State of Nature

An Anthropological Encounter with Multispecies Science Fiction

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Sometimes all it takes, to crack a problem, is a new perspective.

—Adrian Tchaikovsky, *Children of Time*, 2015.

Abstract

Drawing on Deleuze's and Guattari's notion of "zone of indiscernibility," this article forges a link between science fiction and multispecies anthropology through a close reading of Adrian Tchaikovsky's (2015) recent science fiction novel *Children of Time*. In so doing, it argues that Tchaikovsky's novel allows us to challenge received notions of the human and nature in Western political theory while working to imagine a culture and politics adequate to a technologically forged multispecies society. At the same time, it suggests that Tchaikovsky asks us to imagine a zone of indiscernibility in tangible terms as a space multispecies alliance.

In the introduction to *The Left Hand of Darkness*, Ursula K. Le Guin (1976) pauses to define the conceptual ambition of science fiction. When science fiction aims merely to extrapolate current trends to predict the future, contends Le Guin, the results tend to be tediously predictable. The genre, she argues, is better served when treated as descriptive "thought-experiments." By "descriptive," Le Guin means more than objective representation. To be descriptive, she suggests, is to offer a highly subjective view of the world, an account that is in some sense comparable with "lying." Such description performs the paradoxical feat of telling the truth through lies, which are not exactly lies, but rather truth as the author has seen, felt, heard and experienced it, "in detail and through a great deal of emotion" (14). Like all fictions, science fiction's lies are built on facts, historical and current, that rework the present into metaphorical encounters intended to elicit change in a reader.

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Le Guin's likening of science fiction to lying is, of course, a provocation aimed at challenging what we think of as empirical. It encourages us to broaden our understanding of the relationship between (science) fiction and reality as a means of gaining insight into our current condition. In a recent experimental article that draws on Gilles Deleuze and Félix Guattari's notion of a "zone of indiscernibility," Casper Bruun Jensen (2018) takes this provocation further by reading anthropology of climate change alongside climate change science fiction in order to generate interventions into crises of the Anthropocene. In Deleuze and Guattari's thinking, a zone of indiscernibility is a site of entanglement between two things that generates an ontological indefiniteness. It is a process, they write, by which "components remain distinct but something passes from one to the other, something that is undecidable between them. There is an area *ab* that belongs to *a* and *b*, where *a* and *b* "become" indiscernible (Deleuze and Guattari 1994, 20). In other words, despite the blurring of boundaries, the initial components do not merge or melt into one another but rather remain separate while sharing a space of integration that brings them into communication. But a zone of indiscernibility is also a process of interaction that can be elicited. Jensen, for example, engenders it through a "lateral comparison" that tacks back and forth between climate-fiction and an anthropology of climate change.

For Deleuze and Guattari, the zone of indiscernibility describes an abstract process whereby new concepts are engendered through the intermixing of components from existing concepts. But in their discussion of "becoming animal" in *A Thousand Plateaus* the zone of indiscernibility takes on a more tangible, physical sense as it is used to characterize a process of mutual informing between humans and animals, whereby (sub)qualities pass between the two to produce an effect beyond comparison or mimesis (Deleuze and Guattari 1987, 274). As Erinn Gilson (2007) notes, becoming animal is about a *becoming with* in which something new emerges. In this sense, it is helpful to think of the zone of indiscernibility in terms of what Gilbert Simondon (2017) calls the space of "associated milieu," which is a site of provisional structuring of an emergent functional coherence across entities of different orders of magnitude. Importantly, a zone of indiscernibility does not link categories of being but rather processes of becoming to elicit novel, unanticipated becomings.

What might be gained by experimenting with both the conceptual and physical notions of the zone of indiscernibility in reading science fiction with anthropology? The following pursues this question through a close reading of Adrian Tchaikovsky's (2015) recent science fiction novel *Children of Time*, in which the remnants of humanity packed into a generational "ark ship" must contend with a novel species and nature for the right to revive human

civilization on a new planet. Tchaikovsky's novel is an epic, multi-generational, and multispecies tale that I read as forging a conceptual zone of indiscernibility between science fiction and multispecies anthropology in a way that advances the political stakes of the latter. Specifically, I argue that it challenges received notions of human and nature in Western political theory while working to imagine a culture and politics adequate to a technologically forged multispecies society. At the same time, I suggest that Tchaikovsky asks us to imagine a zone of indiscernibility in tangible terms as a space multispecies alliance.

Nature, Multispecies, and the Social Contract

If human civilization manages somehow to survive this century, future historians will look back on our time and note that where conventional politics failed spectacularly to address climate change in the Anthropocene, science fiction rose to the occasion admirably and with ample imagination. Recent science fiction especially takes up the challenge with thought experiments that stage encounters with imagined multispecies worlds in post-apocalyptic settings. Some of these deal with climate change directly while others, like *Children of Time*, are more allegorical, treating climate change as a symptom of modern humanity's flawed relationship with the natural environment. In contrast with many post-apocalyptic science fiction imaginaries from prior decades, these works tend to posit a condition of post-nature, by which I mean that there is no longer epistemic certainty regarding the ontology of nature, its qualities, composition, laws, and limits. Accordingly, abandoning technology and returning to nature is not part of the kind of intervention they offer into conditions of the Anthropocene. They are more likely to ask instead how we might re-conceptualize technology, in particular the relationship between the technological and the organic. Such an orientation towards nature puts these works on a similar conceptual footing as multispecies anthropology, which also challenges humanist presuppositions behind modern categories of nature, culture, and technology and seeks to expand anthropology's focus from humans to the multitude of living organisms with which humans are entangled in technologically informed environments. Multispecies ethnography, like much science fiction, also experiments with different modes of storytelling as it explores "how 'the human' has been formed and transformed amid encounters with multiple species of plants, animals, fungi, and microbes" (Kirksey et al. 2014). In so doing, it seeks to redefine what the human is, putting emphasis on the idea of the human as co-constituted in a web of organic and technological relations, in order to understand what the "human is becoming." For both post-apocalyptic science fiction and multispecies ethnography then, nature is neither

a given nor constant. It is, rather, a force of ontological indeterminacy and potential that is inseparable from the industrial processes that have remade the planet over the past centuries.

Children of Time does not necessarily move the needle in the conversation regarding nature in multispecies anthropology. In fact, the debate around nature in the story is somewhat elementary, with human civilization facing extinction in the wake of a battle between a faction of nature purists and those who believe humans are destined to alter the natural order through technological machinations. Instead, the story forges new ground, I argue, in the way that it brings the multispecies argument into conversation with Western political philosophy, specifically social contract theory.

Social contract theory is typically associated with thinkers such as Thomas Hobbes, John Locke, and Jean-Jacques Rousseau. It constitutes an early attempt to provide theoretical grounding for the idea of civil liberal society as a historical object and ongoing project of negotiation between the state and the people. Insofar as each of these thinkers makes a particular intervention informed by the central political crisis of their time, they share a concern with defining the nature of a legitimate and moral political authority within the framework of popular sovereignty. Each, moreover, embarks from the premise that society emerges with man's exit from a "state of nature," thus working from a nature-culture binary that has deeply informed science, civilization, and progress in modernity, particularly in the West. Human society, in this formulation, constitutes an artificial order that supersedes a prior organic order.

When the political scientist Bruce Jennings (2016) revisits these texts to develop a political theory for ecological governance adequate to crises of the Anthropocene, one of his central concerns is reinterpreting the state of nature in social contract theory. Jennings argues that, for the authors mentioned above, nature is a "philosophical device" used to establish the necessity and justification for a social order, and should not be confused with an empirical argument concerning the natural world as such. It is a way of conjuring a pre-social condition, prior to the influence of social conventions so as to enable a claim about an underlying human nature that necessitates the formation of society (Hobbes [1651] 1968), establishes an inalienable right to property (Locke [1689] 1980), or provides the spirit for the general will of popular sovereignty (Rousseau [1762] 2012). Not surprisingly, since the attention in these arguments is on the human condition and human nature, everything non-human gets short shrift. This is so even for Rousseau, whose apparent longing for some pre-lapsarian harmony with nature in the *Discourse on Inequality* (1754) serves merely to sharpen his critique of social inequality and sets the stage for the introduction of the social contract (Rousseau [1762] 2012).

Working from the premise that the state of nature in social contract theory provides the philosophical underpinnings for contemporary liberal capitalist society, Jennings argues that any ecological fix to our current conditions requires rethinking its assumptions. We need to debug our philosophical OS, or operating system, as it were. Specifically, Jennings views our current environmental crisis as an effect of our hyper-individualistic interpretation of the essential human rights of life, liberty, and happiness stipulated in social contract theory. The result, he argues, is a “social contract of consumption” (19) under which citizens have exchanged active citizenship and freedom of sovereignty for the promise of material affluence at the expense of the environment. In his attempt to remediate this reading, Jennings reinterprets the advent of society not as an exit from a state of nature and correlate emergence of a binary nature-culture schema but rather as the establishment of a “cocreative dialectical interplay” (54) between nature and culture. There is certainly compelling evidence in the social contract theory corpus for such a move. In Hobbes, for example, humanity does not so much exit a state of nature as hover precariously at the threshold between nature and culture. The threat of regression back into the chaotic violence of nature provides a persistent reason for individuals in Hobbes’ commonwealth to submit to the sovereign. The relationship is even clearer with Rousseau, whom Jennings reads as arguing for an understanding of society as an expression of ontological movement effected through a dialectical tacking back and forth between nature and culture. Drawing mainly from Rousseau, Jennings ultimately wants to recover that ontological movement by “re-enchanting” our relationship with nature. I will come back to this idea at a later point. For now, suffice to say that for Jennings the possibility of re-enchantment rests on Rousseau’s identification of “pity” as an inherent human sense carried over from a state of nature.

It is in this notion of pity that his thinking becomes entangled, I will show, with the import that Tchaikovsky gives to the notion of mercy in *Children of Time* for forming a multispecies alliance. But Tchaikovsky ultimately takes things a step further than Jennings. Whereas Jennings argues for human recognition of the significance of other-than-human life, Tchaikovsky presents being human as an ethically impoverished and ontologically stalled state that requires nothing short of an unmaking of the human as the first step in the reboot of “civilization.” In what follows I trace Tchaikovsky’s argument through close attention to the various plot twists and themes of *Children of Time* with the aim of generating a conceptual zone of indiscernibility between science fiction and multispecies anthropology.

A Different Nature

Children of Time begins with a familiar conflict that, borrowing from Latour (1993), we might identify as between hybridists and purists. The former, confident of human superiority, see the universe with its many uninhabited planets as an empty canvas awaiting the ingenuity and mastery of human intervention. By contrast, the latter are return-to-nature-fundamentalists who are angered by the environmental devastation that humans have perpetuated on Earth. Under the slogan “Non Ultra Natura” (No Greater than Nature), or NUN for short, they demand the cessation of human interference in the natural world, whether on Earth or in the stars. The hybridists are represented in the story by the character Dr. Avrana Kern, who we meet in the first pages of the book at her moment of ultimate triumph, poised to commence a radically ambitious project for rapid development of sentient life on a newly terraformed planet that she has unabashedly named “Kern’s World.” Kern is the embodiment of human hubris. She is humorless, shameless in her arrogance, and merciless in her contempt for any one or thing she deems irrelevant or an obstacle in her aspiration to achieve her scientific legacy and greatness. She reserves a special degree of vitriol for members of NUN: “If they had their way, we’d all end up back in the caves. Back in the trees,” she exclaims in disgust when thinking of their opposition to “Kern’s World.” “This is the future. This is where mankind takes its next great step. This is where we become gods,” she declares in her mind as she delivers her speech to an audience of scientists and engineers aboard a space station laboratory, the Brin 2, orbiting the planet at the inauguration of the project (Tchaikovsky 2015, 3).

Initially, Kern’s project is about evolution, not becoming. Evolution, argue Deleuze and Guattari (1987, 234) produces filiation. Whereas becoming involves an “alliance” formed in the opening of processes across different kingdoms and different orders of magnitude to produce greater differentiation, evolution tends to work within the confines of a linear hereditary motion of a single species.¹ Becoming, in other words, is a phenomenon reserved for a multispecies relationality while evolution is the conceit of a single species afraid of extinction. And the possibility of extinction is clearly on Kern’s mind:

Human history was balanced on a knife edge. Millennia of ignorance, prejudice, superstition and desperate striving had brought them at last to this: that humankind would beget new sentient life in its own image. Humanity would no longer be alone. Even in the unthinkably far future, when Earth itself had fallen

¹ I write “tends to work” here since Deleuze and Guattari allow for the possibility that an evolution that encompasses symbiosis between species might be a becoming.

in fire and dust, there would be a legacy spreading across the stars—an infinite and expanding variety of Earth-born life diverse enough to survive any reversal of fortune until the death of the whole universe, and perhaps even beyond that. Even if we die, we will live on in our children. (Tchaikovsky 2015, 5–6)

Kern is not interested in other species, outside the question of how they might benefit her desire to create more humans, or more specifically, humans to venerate her. For although humanity has gone into the stars to establish an empire of colonies on other planets, it has failed to encounter what it considers sentient life. This situation has left it caught in a bizarre feedback loop, consuming its own image as an icon of greatness while fighting itself at the same time. Kern’s project aims to remediate this situation by facilitating the rapid evolution of monkeys into a new line of humans with intelligence comparable to but not surpassing their creators. The title of the project, the “Exaltation Program,” bespeaks the utter hubris of the endeavor. The plan is as follows: A container of monkeys (the proverbial “barrel of monkeys”) is to be delivered to the terraformed planet along with a flask containing a nanovirus that has been specially engineered to infect the monkeys and speed their evolutionary transformation into human beings within a few millennia. In the meantime, two humans are to be left behind asleep in an orbiting sentry pod while an AI program emulating their uploaded consciousnesses keeps watch on the process underway on the planet and guards against interference from the outside. The orbiting sentry pod will also continue to transmit a series of mathematical equations to the planet’s surface. When the monkeys-cum-humans are able to answer, the sleeping human passengers aboard the sentry pod are to be awakened and the new line of humans from the planet welcomed into the (human) Empire. With a sense of unshakable confidence buoyed by her unflagging arrogance, Kern stands ready in the first moments of the story to initiate her Exaltation Program. What could possibly go wrong?

Everything: An attack by NUN destroys the Brin 2 facility and sends Kern’s Exaltation Program amok, setting the stage for the central events of the story that unfold over the course of several millennia. In the end, Kern’s grandiose dream of bio-hacking human evolution will be transformed into the possibility for a different kind of humanity to embrace a new phase of becoming within a multispecies alliance. In the meantime, humanity must come to terms with an important and painful realization: Kern’s bio-engineering of humans and the great technological achievements of the Empire represent humanity’s impoverished ontological condition, not the zenith of its potential. In other words, humanity has reached its limit of becoming. That a bio-engineering hack incites the wrath of nature essentialists suggests that

humanity is still stymied by the contradiction of modernity that Bruno Latour (1993) identified at its core, whereby every move toward an expanded multinatural/hybrid collective faces a counter epistemological measure of ontological purification. What is more, Kern's desire to engender the rapid evolution of monkeys into humans is nothing but a pathetic and narcissistic longing to peer into an ontological mirror. Humanity has become "molar" in Deleuze and Guattari's (1987) sense, trapped in an over-codified equilibrium of being that makes it desire only more of the same. Humanity is to be saved from this barren and miserable condition, however, by the hybridizing medium of its own making—the nanovirus. The uplift nanovirus is going to fail by exceeding its programming and working far better than imagined. In so doing, it will produce not more humans, but rather "zones of indiscernibility" for a multispecies becoming that will lay down the condition of possibility for an alliance and dynamic ontological movement.

The NUN attacks that destroy the Brin 2 facility also prematurely release the transport containing the monkeys, which burns up on entry into the planet's atmosphere. Remarkably, the nanovirus, survives and makes it safely to the planet's surface. Dr. Avrana Kern also manages to avoid the fate of the facility and monkeys by escaping to the sentry pod, which she launches into orbit around the terraformed planet. Before putting herself into a so-called "cold sleep," she uploads her consciousness to the vessel's AI program, creating a second alter ego entity named Eliza (an obvious reference to the famous MIT AI experiment), with whom Kern will struggle for sanity and control throughout the story. In the meantime, while Kern sleeps, in little over a decade, the armed conflict between the hybridists and the purists that began with the destruction of the Brin 2 engulfs the Earth and its space colonies to consume the whole human Empire. Two millennia later in the story, we learn the details of this battle from Holsten Mason, a historian aboard the ark ship Gilgamesh, as he fills Kern/Eliza in on events that have transpired. The ark ship carries the last survivors of the conflict, 500,000 souls mostly in cold sleep, and is in desperate search of a habitable planet on which to revive the human race. Total war between the factions broke out, Holsten explains, and terrible weapons were unleashed that devastated higher civilization on Earth, pulling humanity back into barbarism. The final salvo in the conflict was an electronic virus transmitted on all frequencies to human habitats on colonies throughout the galaxy. The virus infiltrated all electronic systems, leaving the inhabitants of colonies and space stations without essential life support. "They had died in alien cold, in reverting atmospheres, under corrosive skies. Often, they had died still fighting each other," Holsten tells Kern/Eliza, painting a pitiful picture of humanity's end (Tchaikovsky 2015, 94–95). On Earth, he goes on, some kind of society might have persisted for a few

centuries until an ice age set in bringing even that to an end. The ice age was brought on by human weapons and technology that had choked the atmosphere and blotted out the sun. When the ice finally began retreating centuries later, hope for the revival of human civilization on Earth returned as humanity began making a comeback. But even that was doomed. “For so long, scholars had taught that the further the ice receded, the better for the world, and yet nobody had guessed what poisons and sicknesses had been caught up in that ice, like insects in amber, the encroaching cold protecting the shivering biosphere from the last excesses of Empire” (Tchaikovsky 2015, 95).

The image Holsten paints of society on Earth is something between post-apocalyptic toxic desolation and a Hobbesian state of nature marked by a war of “every man against every man” (Hobbes [1651] 1968). “There is no returning to Earth,” Holsten tells an implacable Kern/Eliza, hoping nevertheless to spark her sympathy and win permission to settle on the green environment of Kern’s World (Tchaikovsky 2015, 96). Kern/Eliza, however, refuses to recognize the human survivors as one of her own, let alone her responsibility. Holsten’s account only amplifies her disdain for the human race and she remains focused on her Exaltation Program. But the years of cold sleep, the residual trauma of the NUN attack, as well as Kern’s tendency toward a dissociative state (now digitally manifest in her AI alter ego, Eliza) has taken its toll, and she is unable to recall that her monkeys burned up and her experiment was derailed.

Something on the planet has been responding to her steady transmission of mathematical equations but Kern is unable or simply unwilling to acknowledge that it cannot possibly be her monkeys. Meanwhile, she rebukes Holsten and the humans aboard the Gilgamesh, “You are not from my Earth. You are not my humanity. You are monkeys, nothing but monkeys. You are not even my monkeys. My monkeys are undergoing uplift, the great experiment. They are pure. They will not be corrupted by you mere humans. You are nothing but monkeys of a lesser order. You mean nothing to me” (Tchaikovsky 2015, 97).

Kern/Eliza’s refusal, backed by the impressive weapon array of her orbiting pod, leaves Holsten and his companions on the Gilgamesh no choice but to look for another habitable planet. However, they also develop a contingency plan to return with better weapons in the near future in order to take Kern’s World, which they view as *their* rightful inheritance. The story tacks back and forth between events on the Gilgamesh and the surface of Kern’s World where the nanovirus has found an unexpected host. The contrast between the events on the ark ship and the planet are important. On the Gilgamesh, the survivors of the human race descend into an increasingly barbaric conflict, making it clear that humanity, although intent on receiving a second chance, is unable to overcome its proclivity for violence and fear of

difference. Tchaikovsky wants us to understand that humans are doomed by their arrogance and inability to shed a desire for mastery over others. By contrast, on the planet a new species emerges to reach unprecedented philosophical and ethical heights, overcoming religious conflict, gender discrimination, and (species) xenophobia. Through this stark contrast between the descent into chaos aboard the Gilgamesh and the process underway on the planet, Tchaikovsky thus makes it clear that it is was not the monkeys who needed exaltation, but rather human beings. Human evolution, he wants us to understand, has reached what the science fiction writer Clifford Simak ([1952] 1980) called a “bottleneck of destiny,” a condition in which its inherent flaws overwhelm its potential for further becoming. Determined only to gain mastery of other humans and species, humanity is unable to form an alliance with an other so as to enable further dynamic becoming. Humans will thus need to become un-human, to be stripped of their humanness and made monkeys again in order to realize a relation of alliance among humans and with other species. Being made monkey again is not about returning to a state of nature but rather a condition in which the notion itself carries no relevance.

Inversive Exaltations

While humanity unravels aboard the Gilgamesh, Kern’s nanovirus “uplift” performs its mission on the planet. As a product of the fallen human Empire, the nanovirus embodies the flawed conceptual presuppositions of its creators in its design to mediate between nature and civilization as two discrete domains and extract/exalt the monkeys from a state of nature into something worthy of human attention. Or, as Tchaikovsky (2015, 8) writes, it was to adapt and improve until it had engineered a monkey that could “look its creators in the eye and understand.” As such, the nanovirus appears at yet another human tool of extractivism intended to act on nature and transform it into an expression of human civilization.

But the nanovirus misses its target by a wide stretch. Designed to adapt in accordance with any emergent environmental conditions, that is exactly what the nanovirus does. Unable to locate the monkeys but programmed to avoid all non-monkey vertebrate-species, it embeds itself in the planet’s invertebrates, overlooked by Kern and her terraformers as nothing more than part of the ecological “scaffolding by which the absent monkeys would ascend” (Tchaikovsky 2015, 47). Among the various invertebrates the nanovirus is able to affect (ants, spitting spiders, and so on) it finds its most responsive host in the arachnid species *Portia Labiata*, an astute hunter and jumping spider known for its rudimentary ability to improvise and remember new hunting tactics. Over the course of generations, the nanovirus alters the spiders’ mental and physiological qualities, and increases their brain- and physical size accordingly,

while passing on “understandings” through a Lamarckian biological mechanism. Understandings are not knowledge but rather genetically encoded techniques that can be added to a collective’s cumulative skills. As such, they are the foundation for a specific spider community’s technological advance. The larger the collective, the greater its cache of understandings, which the spiders learn to trade strategically in order to advance their community’s political position.

More importantly, insofar as the nanovirus transforms individual organisms, it does so in order to produce the grounds for a collective life rooted in a cooperative and symbiotic alliance. Its success is thus measured not by the quality of the organism it produces but rather the quality of the social and material bonds it engenders. Accordingly, Tchaikovsky (2015, 590–591) tells us, its “first effect” with the spiders is to “turn a species of solitary hunters into a society. Like calls out to like, and those touched by the virus knew their comrades even when they did not have enough cognitive capacity to know themselves.” It is thus a base program for a social contract that is not founded on the conventional transactional rationale whereby the individual negotiates degrees of independence in exchange for collective security. Rather, it tethers individual organisms together in a web of mutual recognition and alliance. I will say more about the mechanisms of this process below. In the meantime, it is worth noting that to challenge the philosophical foundations of social contract theory and posit an alternative multispecies alliance, Tchaikovsky could not have chosen a better host for the nanovirus than the arachnid species. On the spectrum of living beings, there is nothing further from the physiology and morphology of the human species than spiders, placing them entirely outside the charisma register for humans. That physiology and morphology support an entirely different experience of the environment, or what the German biologist Jacob von Uexküll ([1934] 2010) called *Merkwelt*. Spiders, Tchaikovsky (2015, 589) tells us, “think in terms of intricate interconnectivity, of a world not just of sight but of constant vibration and scent.” By comparison, Tchaikovsky presents the human sensorium as almost impoverished, restricted as it is to an extremely narrow bandwidth that allows for only a superficial understanding of the surroundings. As a result, spiders and humans inhabit incommensurable ontological planes, and are placed in a position of radical alterity to one another, as mutually unknowable-unknowns. Tchaikovsky wants us to consider a spider capacity for worlding so far removed from a human world that when spider and human do at last meet face-to-face they are unable to even recognize the others’ attempt at communication, much less to communicate. The human philosophical tradition of a nature-culture dichotomy with its bounded autonomous subject at the heart of human society’s social contract would be unthinkable for the spiders.

Tchaikovsky constructs spider civilization around the notion of “intricate interconnectivity.” As mentioned above, a sense of interconnectivity conveyed in mutual recognition grounds their social contract. Interconnectivity is given material instantiation, as well, in the vision that Tchaikovsky lays out of a civilization constructed with sticky silk webbing, rather than isolating materials like metal and concrete. The spiders’ first real weapon (a slingshot) exploits silk, while their nests, settlements, and ultimately cities are constructed of silk, with silk communication channels and transportation systems powered by energy produced in silk tension lines. Spider civilization thinks and becomes with silk. Web and network are not merely social metaphors but infrastructural presuppositions. Thus insofar as messages from Kern/Eliza in orbit guide the evolution of spider society, urging it along a path that mimics the history of humanity (there is a species war with the ants that threatens to become a total war, a protracted struggle around gender inequality, an ideological war over religious doctrine and so on), there is a certain point at which the ontological discrepancy between a society of silk and a civilization of metal produces a disjuncture that is too severe to overcome. At that point the messages cease to make sense to the spiders. Kern/Eliza’s guidance is designed to produce an industry, flying machines, computers, and eventually space flight in a way that mirrors the history of human civilization. The spiders do in fact realize these goals, but in ways unimaginable to Kern/Eliza – their airships are made of silk and wood and utilize a subtle science of biochemical engineering. As Kern/Eliza eventually confesses to her unexpected children once she begins to understand the difference: “You are not what we wanted, not what we planned for, but you are my experiment, and you are a success” (Tchaikovsky 2015, 481).

Resolutions of Conflicts: Toward a Multispecies Alliance

Importantly, the spider propensity for thinking in terms of interconnection informs their mode of conflict resolution. The first example of this, which sets the stage for the ultimate conflict with the crew of the Gilgamesh, is an interspecies war between the spiders and the ants. The ants pose an existential threat to the spiders’ flourishing civilization. As with the spiders, the nanovirus has transformed the ants. They have become considerably larger, each about one foot long, and gained a natural ability to produce fire from acids in their body. They have also developed rudimentary metallurgy, which they use to fashion metal blades and saws as cutting mandibles. It is the ants, actually, that develop the technology to receive transmissions from Kern/Eliza, which the spiders steal from them and develop further. Despite these abilities, the ants lack the sophistication of spider society. Tchaikovsky does not give them the same potential

for a dynamic social becoming that he gives the spiders. There are no identifiable ant actors, as there are with the spiders, who can challenge and change emerging social norms. The ants remain instead a mindless mass compelled by their base programming to colonize and devour new territory, which puts them on a collision course with the spiders, threatening to lay waste to the spider society. As such, Tchaikovsky sets up the confrontation with the ants as a multispecies limit test for spider civilization. The question is: how will the spiders deal with a potentially ruthless and efficient force with whom it is unable even to communicate? Clearly, we (human readers) think, the ant and spider confrontation will become a total war, the only possible outcome of which will be the annihilation of one side or the other. Indeed, this is also how the struggle initially unfolds, with the spiders seemingly destined to lose an epic battle and face extinction. Tchaikovsky surprises us, however, by mobilizing the theme of interconnection toward an unanticipated resolution of the conflict. We are led to understand that the spiders perceive the ant problem not as humans would, that is, as involving a lesser being and enemy that must be destroyed for self-preservation. Rather, the spiders see the ants as a species from which they can learn and benefit. Accordingly, they approach the ants as a challenge of communicating across species. Ultimately, the spiders are able to interpret and intervene in the ant communication system. This allows them to reprogram the ant colony, diverting it from mindless conquering to functions that become integral and beneficial for the spider civilization. The term Tchaikovsky employs here is “use” but he qualifies the meaning so as to relieve it of any exploitative connotations. Use is better understood as opening something up to a cross-pollinating relationship of mutual becoming within a zone of indiscernibility. Such a zone sets up a field of resonance across difference in which difference is maintained as a generative potential.

When the Gilgamesh returns with new weapons able to neutralize the Kern/Eliza orbiting sentry, the spiders again face extermination at the hands of an absolutely ruthless and efficient force with whom they are unable even to communicate. Again, Tchaikovsky prepares us for total species war. The spiders, moreover, have become a formidable opponent such that the outcome is nowhere near certain. While the humans have returned with better weapons, the spiders have, in the meantime, become a space-capable species using technology of silk and bio-chemical engineering. By shielding the planet behind an orbital webbing, they force the epic battle between the species to be fought in orbit.

The battle between the spiders and remainder of humanity aboard the Gilgamesh is the pinnacle conflict in the story. It is also where Tchaikovsky unequivocally lays out the stark contrast between the spiders and a humanity in its impoverished state of being with its

ontological movement stalled by its violence toward anything that it cannot subject and destroy. Or as Tchaikovsky (2015, 589) puts it, “Genocide—of other species and of their own—was ever a tool in the human kit.” Humanity, as always, goes into the battle overconfident of its God-given species superiority only to realize too late that it is no match for the spiders. As the human offense turns into a collapsing defense aboard the Gilgamesh and the end of the human race appears to have arrived, Holsten sums up the tragedy of humanity’s failed promise:

What a history! From monkey to mankind, through tool-use, family, community, mastery of the environment around them, competition, war, the ongoing extinction of so many of the species who had shared the planet with them. There had been that fragile pinnacle of the Old Empire then, when they had been like gods, and walked between the stars, and created abominations on planets far from Earth. And killed each other in ways undreamt of by their monkey ancestors. (Tchaikovsky 2015, 584)

Holsten, and the other humans aboard the Gilgamesh, we realize, are not all that different from the ants. Ontologically stalled in a mono-species feedback loop, they remain trapped and thus doomed to self-annihilation by their own impulse to perpetuate the mindless annihilation of any species they fear and cannot understand. Holsten’s epiphany arrives in the form of a moment of incisive self-reflection as he prepares to die “human” facing the spiders: “Holsten hefted Lain’s stick. The spider was huge, but only huge for a spider. He could smash it. He could sunder that hairy shell and scatter pieces of its crooked legs. He could be human in that last moment. He could exalt in his ability to destroy” (Tchaikovsky 2015, 587).

Holsten’s final thoughts reflect the tragedy of the human race. In facing the spiders, he surrenders to what he perceives to be an immutable human nature inscribed at the core of his being. His presumption of an essential nature that persists despite the impact of countless forces over millennia places him in ideological affinity with the members of NUN, who imagined there was a pure nature to which humanity might return. The spiders, by contrast, harbor no such assumptions of a fixed nature. Their own techno/nature ontological indeterminacy as well as their encounter with the ants has taught them that nature is not an absolute determinant but rather something closer to a potential that can be redirected toward productive entanglement. Accordingly, they take a different approach to the existential threat presented by the return of the humans.

Faced with the arrival of humanity, the creator-species, the giants of legend, the

spiders' thought was not How can we destroy them? but How can we trap them? How can we use them? What is the barrier between us that makes them want to destroy us? The spiders have equivalents of the Prisoners' Dilemma, but they think in terms of intricate interconnectivity, of a world not just of sight but of constant vibration and scent. The idea of two prisoners incapable of communication would not be an acceptable status quo for them, but a problem to overcome: the Prisoners' Dilemma as a Gordian knot, to be cut through rather than be bound by. (Tchaikovsky 2015, 589–590)

Whereas the humans impulsively turn to genocide, the spiders overcome their unease toward the humans and envision the possibility of a human/spider multispecies society. They seek an alliance founded not on the art of reason but on the empathy of kinship, expansively defined, to reach across species and recognize “likeness” at a microbiological level. Tchaikovsky reserves this surprise for the penultimate chapter of the book, appropriately titled “Quality of Mercy.” The chapter follows what we are led to believe is the end of the human race as the spiders overrun the Gilgamesh, cutting through metal walls and human defenses. But even as the crew of the Gilgamesh responds with deadly fire, killing and maiming countless spiders, the spiders implement a different tactic that involves infecting the humans with a hacked variant of the nanovirus. The spiders introduce the nanovirus into the humans through various means that appear at first as exceptionally deadly biological weapons that head straight to the victim's brains, causing them to convulse and collapse. But the hacked nanovirus is not designed to kill. The spiders have studied mammalian neurology and re-crafted it, rather, to weave a new society by penetrating the depth of the human brain and re-writing certain parts so as to foster mercy and compel them to recognize the spiders as kin. It tells them “This is us; they are like us. It tells the spiders the same... We are like you” (Tchaikovsky 2015, 592). Mercy on the part of the spiders towards the humans compels them to reach out and try and communicate with the humans while the mercy that the spiders engender in the humans by means of the hacked nanovirus compels the humans toward an openness to a broader reality that includes the spiders as kin. Recognition opens a zone of indiscernibility between the two species, permitting a thread of empathy to form, which Tchaikovsky defines as “the sheer inability to see those around them as anything other than people too” (2015, 598).

Tchaikovsky's turn to mercy has its precedent in Rousseau's social contract theory. Rousseau invokes the notion of a human capacity for pity in his refutation of Hobbes' pessimist view of human behavior. For Rousseau, pity defines an underlying human condition in a state

of nature, bespeaking a disposition for goodness that is irreducible to any rational moral calculus. He writes:

I speak of pity, a disposition suitable to beings as weak and as subject to so many ills as we are, a virtue all the more universal and all the more useful to man as it precedes the use of all reflection in him, and so natural that the beasts themselves sometimes show perceptible signs of it. Without speaking of the tenderness of mothers for their young and of the perils they brave to protect them, we daily observe the repugnance horses have for trampling a living body underfoot. An animal does not pass by a dead animal of its own species without uneasiness. Some of them even give them a kind of burial. And the sad lowing of the cattle entering a slaughterhouse proclaims the impression they receive from the horrible sight that strikes them. (Rousseau [1762] 2012, 83)

Pity, in Rousseau's thinking is what allows us to place the well-being of another before concerns for oneself. It opens an affective channel between beings such that one feels an "innate repugnance to see his fellow human being suffer" (Rousseau [1762] 2012). Moreover, Rousseau extends pity here to animals, thus making it an affective thread that not only links human to human but potentially, traverses species to bond human and nonhuman in a web of compassion.

When Bruce Jennings turns to Rousseau in order to ground his political theory for a "new social contact with the Earth," it is the latter's evocation of pity that he finds to be the most promising force for regaining the ontological movement born of the dialectical interplay of nature and culture. Jennings reads Rousseau as insisting that pity is not left behind when humans exit a state of nature. It is, he argues, an important primal force that not only carries over to society but also forms the condition of possibility for society. Or as, Tchaikovsky put it, it is what enables organisms to know "their comrades even when they did not have enough cognitive capacity to know themselves" (2015, 590–591). For Rousseau, argues Jennings, pity is a force of transcendence and thus an element of enchantment that transforms the bonds between individuals in society into something more than just functional connections. It becomes the "connecting link between the human mind and self and a broader reality and context of meaning and value" by "tak[ing] us outside of ourselves" and into the perspective and consciousness of another (Jennings 2016, 78). Transcendence, in this formulation, is thus not so much metaphysical as it is an intersubjective motion driven by compassion. It is the

ability to go beyond oneself and occupy the space and time of another being. To feel pity is to make oneself vulnerable to the outside, to open space within oneself for another, and to attempt at the same time to try and inhabit another's perspective and experience. What keeps people committed to the general will in Rousseau, argues Jennings, is precisely a sense of civic enchantment that promises ontological movement, a becoming better of community and life. Accordingly, we must see the social contract in Rousseau as a philosophical commitment to continual ontogenesis (Jennings 2016, 82–83). Jennings thus suggests that we understand Rousseau's general will as a “gesture in the direction of a relational being and an ontological condition of symbiosis and interdependence. Our potential capability to will or intend the flourishing of others with equity and impartiality is inseparable from the possibility of flourishing ourselves” (Jennings 2016, 81).

Jennings' commitment to thinking from a human perspective while maintaining a nature-culture division for the sake of its dialectic brings him to stop short of extending pity to the general will of a multispecies sociality and ecological governance. By contrast, Tchaikovsky asks us to imagine the possibility of ontological movement outside a nature-culture/technology dialectic. Both the spiders and the humans in the story blur the boundaries between nature and technology. But neither can be labeled a hybrid being—they are not cyborgs. To claim that they operationalize dialectic toward a hybrid or cyborg ontology would merely work to reestablish nature-culture categories.² Instead, the operative difference for Tchaikovsky is one of species ontology, or, more specifically, species ontogenesis, as his emphasis is on a multispecies zone of indiscernibility as a site of mutual species becoming. Accordingly, mercy, for him, is not a primal force to be retrieved from a state of nature outside culture but rather a potential to be realized, relationally, through a technological hack and multispecies encounter. Tchaikovsky further complicates this idea by making the success of such an encounter *for humans* contingent on first becoming unhuman. This is made clear during what Holsten believes to be his last moment, as he faces the spiders *and* the urge to be “human” and “exalt in his ability to destroy.” But because Holsten manages to resist the urge to “be human” he opens the possibility to become something else. To become un-human is thus not analogous with the posthuman or becoming what Latour calls “non-modern.” It is not about embracing hybridity, but about when hybridity and notions of a posthuman are no longer relevant.

² See Thomas LaMarre's (2013) discussion of the inevitable dichotomy of the cyborg.

Conclusion: The Multispecies Alliance

Tchaikovsky concludes with a vision of the multispecies society that has emerged from shared “understandings” of the descendants of the human and spider confrontation:

The scientists amongst the spiders first learned what the humans could teach, about their technology of metal and electricity, computers and fusion drives. After that, they taught it back to their tutors’ children, broadened and enhanced by a non-human perspective. In the same way, human minds have unraveled the threads of the spiders’ own complex biotechnology and offered their insights. Both species have limits they cannot easily cross: mental, physical, sensory. That is why they need each other. (Tchaikovsky 2015, 597)

This alliance takes tangible form in the complex symbiotic assemblage of the vessel, *Voyager*, with which the spiders and humans stand poised to embark on a new project to the stars to track a signal of life from a distant planet that was once part of the human Empire:

The *Voyager* is a living thing with a fusion-reactor heart, a vast piece of bioengineering with a programmable nervous system and a symbiotic ant colony that regulates, repairs and improves it. It carries a crew of seventy, and the stored genetic material of tens of thousands of others, and hundreds of thousands of Understandings. (Tchaikovsky 2015, 597–598)

Tchaikovsky’s story thus in some ways ends where it began, with the launching of a ship on an ambitious project to bring new life to the stars. But this time, the project is not marred by human conceit and an impulse for mastery and or destruction. The aim is not to conquer or colonize but to engender yet another zone of indiscernibility through which to enfold another species into the empathetic resonance of a multispecies alliance.

Tchaikovsky uses the terms empathy, mercy, and pity interchangeably throughout the text to delineate the key, or vital, force of compassion necessary for the establishment of a zone of indiscernibility between species. One could of course argue the necessity for attention to the subtle differences between these terms. But the point is that Tchaikovsky wants us to envision the possibility of a multispecies society able to realize continued mutual ontological motion or ontogenesis in an alliance grounded an affective and material entanglement. Although Tchaikovsky never uses the term social contract to describe such an alliance, I have argued, via Jennings, that his evocation of pity, empathy, and mercy carries with it a gesture to social

contract theory by virtue of its resonance with Rousseau's thinking. Tchaikovsky leaves us to pursue his thought experiment with a question, voiced through Kern. What would human history have looked like had it been able to embrace pity toward a multispecies alliance? "What might then have happened? Would there have been the same wars, massacres, persecutions and crusades?" (Tchaikovsky 2015, 592).

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