13 Interspecies love

Being and becoming with a common ant, *Ectatomma ruidum* (Roger)

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Insect love has lately become the subject of much attention from anthropologists.[1] In confessing my own affections for *Ectatomma ruidum* – an ant species that is flourishing in the forested landscapes, agricultural fields, and suburban lawns of Central and South America – I must be clear that our feelings are not at all mutual. At best, *Ectatomma* ants remain indifferent to human beings. When an *Ectatomma* forager sees a large vertebrate, a potential predator like me, she will often turn her whole body to face-off – jaws open, legs firmly planted, stinger ready. If these persistent threats are empty (any *Ectatomma* aficionado knows that the ant has difficulty stinging humans and will scurry away, and try to hide, upon serious molestation) they still serve as reminders of the unease generated by my fondness for their kind. Threats also became evidence that these ants were capable of returning my gaze (Haraway, 2008: p. 21). Recognizing gaps in our gaze, and disjunctures in our interests, offers a point of entry to rethinking respectful coexistence across the species interface.

Ectatomma ants are flighty nomads – ever moving among worlds. Nomadic subjects, such as these agile insects, can be dangerous, irredeemably destructive, or tolerant, in the words of Isabelle Stengers (2011: p. 373). The challenge, for Stengers, is to trap nomads, to enfold them in production of what she calls cosmopolitical worlds. Cosmopolitics offers an idiom for considering the diverging values and obligations that structure possible non-hierarchical modes of coexistence. "The cosmos refers to the unknown constituted by multiple divergent worlds," Stengers writes, "and to the articulations of which they could eventually be capable" (Stengers, 2005: p. 995). These common worlds involve contingent "political" articulations. We have to build them together, tooth and nail, in concert with other agents (Latour, 2004: p. 455). Cosmopolitical worlds are structured by relations of *reciprocal capture*, a dual process of identity

[1] The definitive work on insect love, *The Illustrated Insectopedia* by Hugh Raffles (2010), chronicles diverse ethnographic adventures – among "squish freaks" who obtain pleasure by stepping on bugs, artists who care for mutant insects living in radioactive zones, as well as other queer entanglements connecting humans with arthropods. Lovers of bees and people who eat insects have also featured in recent ethnographies (Morris, 2004; Moore and Kosut, 2013). Insects have also featured prominently in anthropological accounts of animal becomings in the realm of warfare (Kosek, 2010).

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construction where each agent has an interest in seeing the other maintain its existence (Haraway, 2008: pp. 35, 42; Stengers, 2011: pp. 35–6).

My tale of unrequited insect love explores the conditions of capture where relations are contingent and not always reciprocal. Tracing actions oriented to the care of beings and things, sometimes across species lines, I consider how agents come to be enlisted in the production of common worlds, and how they escape. I regard *Ectatomma ruidum* ants as agents of cosmopolitical assembly, conscious beings who become involved with other creatures through relations of reciprocity, kinship, and accountability (see Kockelman, 2011). Drawing on my own bio-behavioral experiments and ethnographic observations I will explore theoretical, normative, and ethical proposals for being and becoming with others.

First contacts

In 1997 I volunteered on a study of ant community ecology on Barro Colorado Island, Panama, an "open air biological laboratory," which was created in the 1920s. This man-made island emerged when a small hill-top was surrounded with water during the

Figure 13.1 These two *Ectatomma* foragers have been captivated by a plant. While waiting for nectar – a sugary and nutritious liquid – the ants help protect the plant from leaf-eating insects. This plant, a species of *Inga*, has captivated some humans too. The flesh of its fruit tastes like vanilla ice cream. In other words, these plants (known in English as "ice-cream-beans") have enfolded ants and humans in common cosmopolitical worlds. Gamboa, Panama. Photo courtesy of Alex Wild.

damming of the Chagres River by US engineers who created the Panama Canal (Lindsay-Poland, 2003). This island became imagined as a place that contained the mysterious secrets of nature's past, an exotic field site for adventures in the present, and a place where new discoveries might unlock future possibilities (Strain, 1996/1997). The field station (which came to be known by the island's initials, BCI) quickly became a site of pilgrimage for aspiring scientists who wished to become tropical biologists (Henson, 2002).

While some projects on BCI were imagined as "pure research," my own work in Panama had a clear relation to US geostrategic interests. Laboring as a quasi-insider in the shadows of US military installations, in the midst of failing imperial ambitions, I began to understand how oblique powers and unexpected contingent events were mediating research agendas. The project that brought me to Panama was indirectly in the service of the citrus industry. *Wasmania auropunctata*, an "invasive species" from Central America, had become a common agricultural pest in the southern United States. In Florida and other southern states, these tiny ants were taking up residence on the leaves and fruit of citrus trees. Fruit pickers were demanding premium wages to work in infested groves, because the ants can deliver a painful sting – especially after getting inside of the workers' clothes.

My own work involved setting tuna fish baits on the forest floor to lure *Wasmania*, and other ants, out of the leaf litter. *Ectatomma,* one of the largest ants in this ecological community, fancied tuna too. I became familiar with the habits of this charismatic ant and came to easily recognize it with my naked eye. One day, while walking the trails of BCI, an unusual sight arrested my attention. I watched two *Ectatomma* workers, one carrying another, exit out of a colony entrance and make a bee-line toward the entrance of another colony several meters away. When the pair reached the other entrance, they disappeared inside.[2]

In the era when I made this observation, the late 1990s, the genetic determinism of E. O. Wilson's sociobiology held sway among ant experts. In the ideal ant colony (at least according to the ideals of Wilson and his followers) there is a single queen and all of the workers are sisters: non-reproductively viable females. There is considerable deviation from this ideal type. In many species, *Ectatomma* included, colonies can have multiple queens. Workers can also lay eggs – some of which are eaten by other adults and others which develop into larvae. Male ants – with wings, small heads, and a waspy look – take little part in colony life other than mating.

Sociobiologists were asserting in the 1990s that the ant colony "is a superorganism." Nests of ants were "analyzed as a coherent unit and compared with the organism in the design of experiments, with individuals treated as the rough analogues of cells." In an encyclopedic tome published in 1990, simply titled *The Ants*, Bert Hölldobler and E. O. Wilson speculated that "natural selection can produce selfish genes that prescribe unselfishness" (1990: pp. 2, 179). As an undergraduate, majoring in anthropology and biology, I became fascinated by behaviors of *Ectatomma ruidum* that did not fit with the

[2] Later I found an article by Stephen Pratt (1989) describing the "kidnapping" of young workers by *Ectatomma* ants from neighboring colonies.

prevailing consensus of the 1990s. Carefully observing ants in the field, I speculated that they were embedded in endlessly expansive networks. If ant colonies were to be understood as superorganisms, my observation of workers moving among colonies suggested that the cells were running wild.

My love of *Ectatomma* developed from these initial surprising observations. Later, while watching different colonies on separate occasions, I observed the transfer of food, larvae, and even winged queens among distinct nests. Putting up a barrier around one focal colony, I let the ants collect all the tuna fish they wanted for an hour. After removing the barrier, and the bait, I watched as tuna fish was redistributed. Ants exited the focal colony and carried it into the nests of neighbors. Minutes after watching tuna entering one neighboring nest, I watched as it was carried out again to an even more distant nest.

Cutting the network

Human social worlds, according to a classic definition from sociology, involve collaborating and doing things together. They are communities of practice and discourse engaged in collective action. Fluid exchanges of material and semiotic elements, a discourse of sorts, structures the social worlds of ants (see Haraway, 2008; Hayward, 2010). While much of the literature about humans is preoccupied with the roles of entrepreneurs, agents that are viewed as being central in the construction of common worlds, it is clear that a multitude is involved in the coproduction of ant worlds.

Insects are generally thought to be incapable of recognizing each other as individuals. With upwards of 300 ants in an *Ectatomma* colony, it is highly unlikely that each colony member recognizes one another. A colony scent, "a complex Gestalt of hydrocarbons" on the cuticle of their exoskeleton, is instead learned by ants. This odor is largely independent of genetic factors and is instead thought to be spread through shared food exchange and grooming (Reznikova, 2007: p. 365). Most ant species vigorously defend the boundaries of their colony – killing intruders from different colonies of the same species on contact. For most ant species the stranger is the enemy "with whom there is the real possibility of a violent struggle to the death" (Balakrishnan and Schmitt, 2000: p. 108).

Ectatomma ruidum is different than most ants – in a certain sense this species is exceptional, in fact. Workers will sometimes stand in their nest entrance, and occasionally bite or drag away other *Ectatomma* ants that are trying to get inside. But often the nest entrances stand empty. "Guard" ants also sometimes stand aside, letting members of neighboring nests, or even ants from colonies several hundred yards away, pass unmolested. Once inside, these neighbors have access to caches of food.

While volunteering on BCI in 1997 I began excavating *Ectatomma* colonies and keeping them in transparent test tubes in the Smithsonian labs. Inside of these nests adults spent much of their time grooming themselves and others. Introducing ants from other colonies, I found that they were often bitten at first, and pulled around the chamber

by resident ants. With time, I found that the strangers were sometimes adopted – enlisted into the social world of the colony. They began doing things together with the other ants – grooming the adults and caring for the larvae.[3]

In the field I found that *Ectatomma* ants sometimes become captured by multiple social worlds. Marking individual adults with paint, and gripping their hind leg with a pair of steel forceps, I positioned them at the entrance of colonies that were not their own. Almost unfailingly, when released, the ants went inside. On follow-up visits to these same nests, I found marked ants foraging for food and bringing it back to their new homes.

Adult ants are only able to eat solid food in concert with their anatomically flexible youngsters. With ultra-thin waists, called petioles, adults cannot move solid foods into the digestive organs of their own abdomens. The larvae of ant colonies are thus agents of *interessement* – to deploy a keyword from actor–network theory. "*Inter-esse*" means being in between or interposed (Latour, 1987). The larvae are obligatory points of passage for solid food that stabilize networks of adults living together in the same nest or colony. The embodied differences of adults and the larvae thus keep them interested in one another.

With a conjoining of diverse body parts, with an intermingling of mutual utility and perhaps pleasure, adult workers and larval ants often eat solid food together. Chopping up the food with their mandibles, adults position manageable tidbits within reach of larvae. Ingesting bits of food, and excreting enzymes to predigest other solids, the larvae break the food down into chemical components. Larvae of many ant species generate nutritious liquids that adults, in turn, drink (Hölldobler and Wilson, 1990: p. 348; Cassil *et al.,* 2005).

Marilyn Strathern astutely observes that the power of actor–network theory (ANT) also presents a foundational problem: "theoretically networks are without limit." Cutting the network, using one phenomenon to stop the flow of others, is what makes this analytic useful in the eyes of Strathern (1996). My study of *Ectatomma ruidum* found that individual ants in colonies are always cutting the network, making high-stakes and potentially arbitrary distinctions between who is enemy and who is ally (see Kirksey, 2012: p. 177). Rather than a categorical rejection of all non-kin, I found a nuanced pattern of graded recognition, where the frequency of hostility increased over topographic distance.

During experimental trials I spent close to 150 hours in the field – staring at small holes in the ground, squatting on my knees, waiting for something to happen. In short, during all this waiting and watching I found that *Ectatomma* ants regularly enter the nests of their neighbors. I also discovered that ants from distant nests – from more than 300 meters away – can readily enter experimental colonies. If conventional models of the ant colony resemble "a hub, or star, network in which all lines. . . radiate from a central point along fixed lines," I began to understand the social world of *Ectatomma* ants as something like a "distributed, or full-matrix, network in which there is no center and all nodes can communicate directly with all others" (Hardt and Negri, 2004: pp. 56–7).

[3] "Social worlds," according to a classic definition from the realm of humans, involve "doing things together" (Becker, 1986).

If Hölldobler and Wilson speculated in 1990 that "natural selection can produce selfish genes that prescribe unselfishness," after more than two decades of searching, with genomic technologies of ever-increasing sophistication, a gene for altruism has yet to be found. Departing from the notion of superorganism, I suggest that *Ectatomma* colonies might be understood as ensembles of individuals – associations composed of conscious agents who are entangled with other beings through relations of reciprocity, accountability, as well as kinship.

The notion of *ensemble* is borrowed from Paul Kockelman, who in turn, has purloined William James' ideas about the self – the sum total of things we call our own. Selfhood involves what constitutes part of the ensemble. In human realms the self-as-ensemble includes one's clothes and house, one's ancestors and friends, one's nail clippings and excretions, one's body, soul, thoughts, and ways of being in the world. Actions oriented to the care of beings and things enlists them in the ensemble (Kockelman, 2011: p. 13). "To care for others is to care for one's self," write Deborah Bird Rose and Thom van Dooren in a related vein. "There is no way to disentangle self and other, and therefore there is no self-interest that concerns only the self" (Rose and van Dooren, 2011: p. 27).

Fluid exchanges

Feeding nestmates, with fluid exchanges of material and semiotic elements, enfolds individual adult ants into ensembles. Stephen Pratt, who studied communication behavior in *Ectatomma* in the 1980s, described the sharing of liquid food in this species with loving attention to detail:

> Droplet-laden foragers returned immediately to the nest tube and, after a few seconds of excitation behavior, either stood still or walked slowly about the nest with [their] mandibles open and mouthparts usually retracted. They were generally approached within a few seconds by unladen workers who gently antennated the clypeus, mandibles, and labium of the drop-carrier, using the tips of their antennae. The carrier then opened its mandibles wide and pulled back its antennae, while the solicitor opened its mandibles, extruded its mouthparts and began to drink. During feeding, the solicitor continued to antennate the donor, who remained motionless. Usually the solicitor also rested one or both front legs on the head or the mandibles of the donor. (Pratt, 1989: p. 327)

William Morton Wheeler, who was perhaps the most prominent early twentieth-century ant biologist, developed an elaborate model to explain the origin and continued functioning of insect societies based on his observations of exchanges of liquid food. He coined the term *trophallaxis* – deriving from the Greek words for "nourishment" and "interchange" – to describe this behavior in 1918.[4] Assuming that the proximate cause of certain behaviors was genetic, Wheeler argued that "the origin of the behavior of

[4] *Six Legs Better*, a cultural history of myrmecology (the scientific study of ants) by Charlotte Sleigh, offers a nuanced account of Wheeler's intellectual formation and his later battles with E. O. Wilson (Sleigh, 2007: p. 248, n. 4).

individual ants *within the context of the colony* could not be explained in terms of individual inheritance. Mutual feeding relations were the true and necessary cause of social forms of life" (Sleigh, 2007: p. 79).

At least since the time of Wheeler's writings about *trophallaxis*, biologists have drawn analogies between the productive capacities of human societies and those of social insects – comparing the ability of human workers to earn wages to the ability of ant workers to collect food; comparing the collective wealth of a nation to the amount of energy stored in nests with caches of food or in the bodies of workers; comparing systems for producing commodities to systems for reproducing new ant queens (Sleigh, 2007: p. 169). These comparisons have been grounded in economic models of rationality and scarcity.

Wheeler based his model of ant society on the work of Vilfredo Pareto, an Italian economist from the early twentieth century, who in his early writing argued that human beings act rationally in pursuing their economic ends. Later in life Pareto studied celebrations of great occasions, jubilees, graduation ceremonies, religious ecstasies, and excesses of all kinds (Millikan, 1936: p. 327). Pareto suggested that human proclivities for these excesses were evidence of what he called "residues," forces which were distinct from instincts or biological drives. But, in Wheeler's hands, Pareto's work on "residues" was inflected with functional evolutionary explanations. Wheeler suggested: "The residues of the common man condemned him to a life that was functionally similar to the ant's" (quoted in Sleigh, 2007: p. 86).

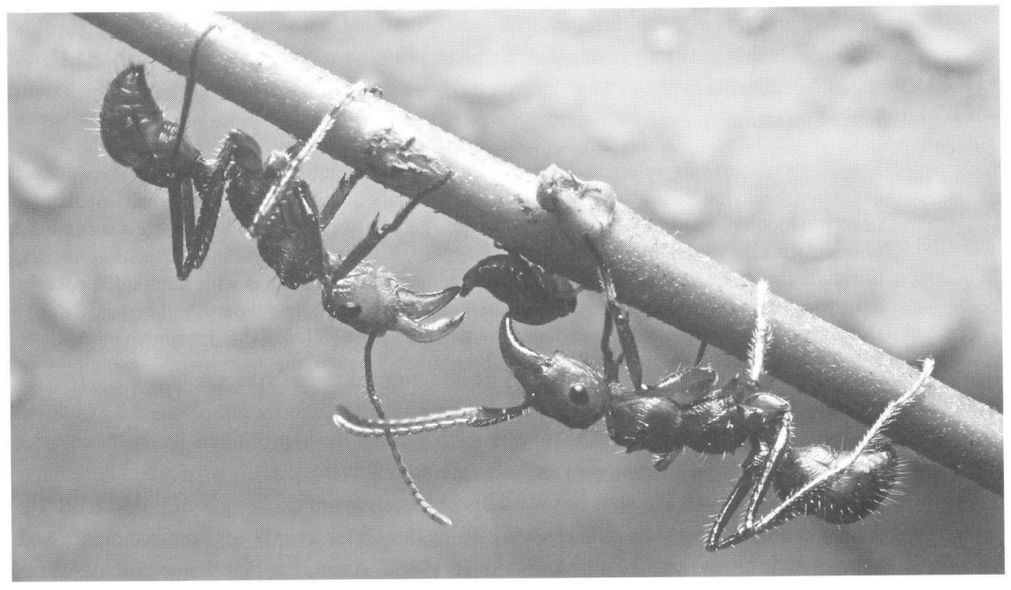

Figure 13.2 Treehopper nymphs feed on sap from plants by piercing the stems with their beaks. Excess sap, concentrated in a honeydew, is exuded out of the nymphs' anus and this sugary liquid often attracts ants. In this picture *Ectatomma tuberculatum*, a closely related species to *E. ruidum*, is tending a treehopper nymph in the Jatun Sacha Reserve in Ecuador. Photo courtesy of Alex Wild.

Paging back and forth again, past nearly 100 years of intellectual history, produces a parallax effect that brings new dimensions of insect sociality into focus (see Strain, 1996/1997). While holding on to Wheeler's insights about nourishment/interchange, I returned to Panama in 2008 and began to rekindle my collaborations with Bill Wcislo, a Smithsonian staff scientist who supported my undergraduate studies of *Ectatomma*. Fujimura (1998: p. 347) suggests that the Science Wars were "not about science versus antiscience, not about objectivity versus subjectivity, but about authority in science: what kind of science should be practiced, and who gets to define it?" Keeping Fujimura's words in mind, I began to design an experiment with Bill that would speak to timely concerns in both of our disciplines.

Bill brought me up to speed about developments in research on *Ectatomma* including a new study of "thievery" by Michael Breed. I had read Breed's earlier papers more than a decade earlier. Breed suggested that individual "thief ants" use chemical camouflage to gain access to neighboring colonies. "Thief ants have reduced quantities of cuticular hydrocarbons on their surface," Breed reported, "and their cuticular hydrocarbon profile is intermediate between the hydrocarbon profile of their own colony and the colony from which they are stealing" (Breed *et al.*, 1999: p. 327; see also Breed *et al.*, 1990, 1992).

My own observations of *Ectatomma* colonies as an undergraduate had already led me to suspect that there was more to the story than "stealing." At the time I speculated that they might be engaged in "trading" rather than thievery. While talking with Bill in 2008, while working with him to design an experiment, I said: "Breed's characterization of these exchanges as thieving has always seemed hasty to me, perhaps neighboring colonies can become allies." Making a quick interdisciplinary translation and conceptual imposition, Bill said: "Nobody has ever demonstrated reciprocal altruism among distinct ant colonies. Let's see if you can." And after thinking a moment, he added: "I would never suggest this as a project to a biology postdoc. It won't involve any new techniques or fancy toys."

Breed's study of thievery was restricted to watching solid food move among nests above ground. Bill and I decided that further studies should focus on the exchange of liquid food, trophallaxis, in laboratory colonies. This would enable us to know if thievery was taking place or if gifts were involved, what Bill glossed as reciprocal altruism.

As I began collecting *Ectatomma* colonies for this experiment I visited a festive space, a place where the value-added excess of late capitalism is routinely consumed. I found a lively patch of ant nests in the leaf litter of a huge *Pseudobombax* tree and in the plastic litter left behind by human picnickers. In a fragment of forested land next to a waterfall in El Giral, a small farming community about an hour outside of Panama City, I uncovered six *Ectatomma* nests among packaging of two brands of chocolate chip cookies (Choki's and Creamas Cuky), a supersized Cheetos bag, and some discarded wrappers of Papitas, a cheese-flavored snack. Amidst a leftover cardboard case of Miller Genuine Draft, as well as Balboa and Panama brand beer cans, I discovered a red bottle cap, a product of the Coca Cola Company, with a cryptic message printed inside: "*Sigue participando*" – keep participating.

After having a picnic of my own in El Giral with friends – Daniella Marini, an Argentinean ecologist who earned a Masters degree from Yale's Forestry Program, and Jesus Hernandez-Montero, a bat specialist from Mexico – I enlisted their help in observing and recording the transfer of food among *Ectatomma* nests. In the shadows of human surplus, in this place where the excess fructose corn syrup and grain from North America and elsewhere was being expended in celebrating minor occasions and jubilees, we found certain species flourishing. Distinct nests of *Ectatomma* were exchanging small insects, crumbs left by picnickers, as well as small protein-packed snacks from *Cecropia* plants called Müllerian bodies. Worker ants exited the entrance of one colony and marched, usually unmolested, into the entrance of another colony.

After unearthing three colonies in El Giral I transported them back to the Smithsonian laboratories. There I assembled an experimental apparatus out of found objects and specialized equipment – plastic tubs, petri dishes, dental cement, aquarium tubes, a slippery substance called fluon, and a Sony digital video camera. In working to produce an experimental matter of fact, that members of distinct *Ectatomma* colonies exchange liquid food via *trophallaxis*, I embedded certain assumptions in this apparatus – namely that these ants would come to regard my assemblages of plastic and plaster as "a nest" and that their behavior in such a nest, exposed to the light of day, is analogous to what they do underground (see Shapin and Schaffer, 1985: pp. 14, 112). After attaching two nests to a common foraging arena, and giving the ants a week to adjust to their new circumstances, I let the paired colonies interact.

Inside this experimental apparatus I duly observed and recorded *trophallaxis* among the colonies I collected from El Giral – workers holding drops of sugar water opened their mandibles, retracted their mouthparts, and fed workers from another colony who gently antennated the donor's clypeus, mandibles, and labium. When I paired the colony I collected from El Giral, with one from nearly ten miles away in the Canal Zone, I initially observed aggression among the ants – biting and dragging each other around the foraging arena. After growing accustomed to each other, after about a week, these unrelated ants started venturing into each other's colonies, and eventually feeding each other with *trophallaxis*.

These observations do not yet constitute a scientific fact – at this point there is a sample size of two paired colonies. If these observations can be replicated in other colonies, then it will be clear to the peers of Michael Breed that *Ectatomma* workers are not just engaging in thievery, as he suggested. Painting individual ants with a unique color code, and tracking their social interactions over long periods of time, would let us gather data that speaks to Bill Wcislo's hypothesis – that members of distinct *Ectatomma ruidum* colonies engage in reciprocal altruism. Finding that individual ants seem to be rational economic actors, like a long list of other animals – lions, crows, and baboons, for example – would certainly be of interest to many biologists. Perhaps, though, these creatures don't have good economic sense. Further research with *Ectatomma* might reveal that their gifts of liquid food might happen according to fleeting whims, sentiments about the distribution of surplus that escape rational calculus.

Becoming with significant others

If adult ants are part of ensembles with their own kind, if individuals are enfolded into relations of care through fluid exchanges with their peers and with their larvae, perhaps they also care for other species of beings and things. The lives of *Ectatomma* ants are entangled with plants that secrete sugary liquid offerings, phloem-sucking leafhoppers that exude honeydew treats out of their anus, and caterpillars that communicate with the ants in high-pitched stridulatory sounds (DeVries and Baker, 1989; DeVries, 1990). Using a particularly clever trick some *Ectatomma* sniff out the pheromones of other ants, smaller species like *Pheidole*, and follow their chemical trails to sources of food (Perfecto and Vandermeer, 1993). To play with Martin Heidegger's language, *Ectatomma* workers are captivated (*benommen*) by other beings and are open to possible becomings – new kinds of relations emerging from non-hierarchical alliances and symbiotic attachments with other agents (Heidegger, 2010).

Wandering within the *cosmos*, the riotous diversity of the rain forest, individual *Ectatomma* ants form *political* articulations with particular individual plants (Stengers, 2005: p. 995). Building cosmopolitical worlds – together, tooth and nail, with other organisms – ants form stable, but contingent, relations against the backdrop of the unknowable beyond. "The species of *Ectatomma* are widely distributed, enterprising ants," according to an early fellow aficionado, Dr. O. F. Cook. "Instead of being a rare 'archaic' curiosity, [it] is decidedly the. . . most abundant insect of the Guatemalan cotton fields" (Cook, 1904b: p. 611). Cook's work also offers ample evidence that *Ectatomma* ants are not trapped, as philosophers in Heidegger's tradition might have it, within a particular environmental world (*Umwelt*). In a separate article, he wrote: "the insect is not, like some of the members of its class, confined to a single plant" (Cook, 1904a: p. 864). Since Cook's time, other investigators have found this ant tending the extra-floral nectaries of many other plant species, for example, on woody liana vines (*Dioclea elliptica*) in the canopy of a low-land Amazonian rain forest of the upper Orinoco and on saplings of a tree in the legume family (*Stryphnodendron microstachyum*) on the Caribbean slope of Costa Rica (de la Fuente and Marquis, 1999; Blüthgen *et al.*, 2000).

Diverging values and obligations structure ambivalent relationships between ants and plants – cosmopolitical articulations characterized by mutual utility and mutual exploitation. Douglas Altshuler has found that the presence of my favorite ant species has certain positive effects for *Psychotria limonensis*, a common shrub in the forest understory of Central America. *Ectatomma* foragers increase the rate of pollination for this species – likely because they startle pollinators, like butterflies, making them move to other plants. Ants also serve the interests of *Psychotria* by defending the plant from herbivorous insects and preventing the loss of ripening fruits. The cosmopolitical world of *Psychotria* also includes fruit-eating birds – tanagers, manakins, and neotropical migrants – that eat ripe fruits and disperse the plant's seeds. Even if both *Psychotria* and *Ectatomma* have cause to be interested in the continued existence of each other, the ants do not always act in the best interest of the plant and its avian companions. Ants scare off fruit-eating birds. After fruits ripen, the continued presence of ants thus does not serve the assumed interest of the plants in seeding new territory (Altshuler, 1999).

While jealously guarding their plants from flighty interlopers, *Ectatomma* ants remain open to overtures from other entrepreneurial agents – creatures that work to enlist them in competing cosmopolitical worlds. "Adding insult to herbivory," in the words of Philip J. Devries, *Ectatomma* ants sometimes welcome leaf-eating caterpillars to feast alongside them on plants with extra-floral nectaries. These caterpillars have noise-making organs that attract *Ectatomma* and other sorts of ants. The sounds made by the caterpillars average at 1,877 hertz, which would be audible to human ears if they were not so very faint. Their repertoire ranges from simple "bub... bub..." sounds to fancier noises such as "beep ah ah ah beep" and "biddup... biddup... biddup." Caterpillar calls summon ants to their defense against predatory wasps and parasitic flies. As a reward for responding to the summons, the caterpillars secrete a liquid gift – a nutritious liquid that is significantly higher in amino acid concentrations than the plant nectar. *Ectatomma* ants tend the caterpillars "with greater frequency and fidelity" when compared to the plant (DeVries and Baker, 1989; DeVries, 1990).

Lori Gruen's notion of entangled empathy might help explain why ants have greater fidelity for caterpillars rather than plants. Entangled empathy is not a mere instinctual response, but involves a commitment to the well-being of others – an awareness of others' interests and a motivation to satisfy those interests. Gruen is developing her ideas about empathy to understand multispecies entanglements – specifically her own interactions with chimpanzees (Gruen, this volume). Exporting these ideas beyond our own situated perspectives, the embodied perspective of primate vision, contains the danger of imposing anthropomorphic assumptions on other worlds. Even still, Gruen's work prompts me to ask: do ants perceive the interests of the plants they protect? Do they recognize plants as beings in the world? Quite possibly not. Are ants aware of the caterpillars' interests and are they motivated to fulfill them? Quite possibly yes. With intriguing sounds, and an anatomical structure similar to ant larvae, it seems plausible that these caterpillars appear to *Ectatomma* as beings (cute baby insects) that demand empathetic regard.

Gruen's work also offers a point of entry to what Matthew Chrulew (2011: p. 134) has identified as one of the central ethical questions of our time: how should we love in a time of radical ecological transformations? The agency of *anthropos* – the ethical and reasoning being that Enlightenment Europeans conjured as their inheritance from classical Greece – has recently been scaled up to embrace and endanger the whole planet. In the Anthropocene, the era of excess when humans have become a geomorphic force, our species has been figured as the agent driving climate change and the large-scale destruction of ecological communities (see critical discussion in Kirksey and Helmreich, 2010: p. 549). In this context, Deborah Bird Rose and Tom van Dooren have asked:

> Given that creatures who are so vividly present in our imaginative lives are nonetheless on the edge of loss, what hope could there possibly be for the countless other creatures who are less visible, less beautiful, less a part of our cultural lives? What of the unloved others, the ones who are disregarded, or who may be lost through negligence? What of the disliked and actively vilified others, those who may be specifically targeted for death?
>
> (Rose and van Dooren, 2011: p. 50)

Escape

With these questions in mind I ventured beyond the realm of the Smithsonian Tropical Research Institute, a social world of ecological scientists where my own love for *Ectatomma* was unremarkable. I began living as an ethnographer in the City of Knowledge – formerly Clayton Army Base, the one-time command/control/intelligence center of the US Military's Southern Command. My temporary residence was an army barracks that had been converted into a backpacker hostel. The landscape of empire had become a picturesque spot of refuge for road-weary travelers on the gringo trail.

The City of Knowledge is now a suburban enclave populated by middle-class Panamanians, indigenous Kuna, staff of international organizations, and a few remaining white Zonians. Here transnational institutions of governmentality and medicalization have begun to inhabit the infrastructure left behind by the US military: the Red Cross, the Nature Conservancy, the United Nations, and the Organization of American States are among the new resident organizations. On an evening bicycle ride in misty rain, I found many other residents engaged in the pursuit of physical fitness. An aerobics instructor was screaming out chants at the top of his lungs to a group of women doing exercises on big inflatable balls inside a huge Kiwanis Club gymnasium. A pair of men, pitcher and batter, were at work in a nearby cage. Joggers, and many other bikers, hailed me with smiles, nods, and lifted eyebrows – recognizing me as a fellow recreator and a possible neighbor.

I found *Ectatomma* ants foraging in the shadows of abandoned satellite dishes, collecting dead insects under electric lights, and living in an expansive network of nests in neatly manicured lawns. Few of my fellow humans were articulate about the ants living in the grass, all around them. More than one of my interlocutors looked at me as if I were a little off, for initiating a conversation about insects. Only after living in the Reverted Zone for several weeks, did I discover some housewives and grounds keepers periodically going around their lawns with boxes of powdered poison, sprinkling it on nests of *Ectatomma* and multiple other species of ants.

Occasional attempts to senselessly poison them aside, *Ectatomma* is flourishing in the Anthropocene. Quick to exploit emergent opportunities, never just sticking to one world, these ants are constantly moving among different beings and are open to possible becomings. This species is proliferating largely beyond the purview of human dreams and schemes. Perhaps these small animals are comfortable with their status as "unloved others," anxious to escape from fleeting encounters with humans into the cosmos, into the unknown beyond anthropocentric worlds.

While refusing the cosmopolitan illusion of Immanuel Kant that there might ever be a final peace (Stengers, 2005), I suggest that we should learn to better embrace species such as *Ectatomma*, cosmopolitical creatures that are good for humans to live with in common worlds. Being with this species responsibly might involve an openness to possible becomings from a respectful distance. If touching significant others, in Haraway's words, generates lively becomings with certain species of companions, "flesh-to-flesh and face-to-face," then ethical engagements with other sorts of critters

demand tactful politeness.[5] Composing common worlds with other species might involve enacting new sorts of loving gestures, making tactful cosmopolitical proposals that leave room for the possibility of escape.

[5] Here I am inspired by the work of Matei Candea (2010, 2011) and Augustin Fuentes (2010; this volume), who both write about "waiting together" with other species. Candea suggests that certain species demand "inter-patience," from humans, rather than straightforward "inter-action" (Candea, 2010: p. 249).

Part III

Toward respectful coexistence