

character, but also as a theoretician of our uncanny entanglement with bacterial life-forms that are, at the same time, most intimate and extremely strange to us.

Through its emphasis on alienness and utter disconnection, the body of literature reviewed in this Books Forum might contribute to the recently initiated questioning of science studies and animal studies' fetishization of attachment while promoting a reconsideration of distance and detachment, as advocated by the Detachment Collaboratory co-founded by our reviewer Matei Candea.<sup>1</sup>

## Books Forum

### Two hopes built on swarms

Thomas D. Seeley

*Honeybee Democracy*. Princeton University Press, Princeton, NJ, 2010, US\$18.78, ISBN: 978-0691147215

Jussi Parikka

*Insect Media: An Archaeology of Animals and Technology*. University of Minnesota Press, Minneapolis, MN, 2010, US\$18.60, ISBN: 978-0816667406

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*The nests that I dissected contained, on average, 14 kilograms (30 pounds) of golden honey. Regrettably, it was all laced with cyanide.*

(Seeley, 2010, p. 50)

Some years ago, in a comment on the conflicting horizons presented in the raging debate between 'relativists' and 'anti-relativists', Clifford Geertz noted: 'We are being offered a choice of worries'

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(1984, p. 265). In the two books that I will be discussing, by contrast, we are offered a choice of hopes. Thomas D. Seeley's *Honeybee Democracy* (2010) presents the hope that scientific research into the collective intelligence of swarms of bees can reveal evolutionarily honed mechanisms for near-optimal decision making, which could then be applied to improve human democratic processes. The (admittedly rather more discrete) hope that one can sense running through Jussi Parikka's *Insect Media* (2010) is quite the opposite: that even as swarms and insects more generally are mapped and incorporated into modern socio-technical assemblages, their constitutive alienness can still creatively overflow attempts to harness the immanent creativity of life for normative optimization procedures; that despite the best efforts of what Stengers terms a 'domesticated Darwinism' (ibid, p. 215), there will be enough strangeness left over in swarms to feed a 'critical ethos of difference and ecosophy' (ibid, p. 205).

Both books, in this respect, actively strive to bring about the opposed hope they embody: Seeley's engaging style and methodical exposition aim to make bees' collective wisdom accessible and applicable in other realms; Parikka's subtly traced and multiply folded account excavates and brings to light a 'countermemory' (p. 25) of the encounter between insects, science and technology, which leads to Deleuze, and not just to Dawkins, to feminist media art, and not just to swarm optimization.

And yet, dwelling too heavily on these admittedly important differences in orientation and style would

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<sup>1</sup> <http://detachmentcollaboratory.org/>.

lead us to overlook a range of internal subtleties, as well as some of the broader ways in which these two projects, for better or for worse, share a common ‘entangled bank’, form part and parcel of the same early twenty-first-century ‘ecology of practices’ (Stengers, 2005). Therefore my aim in this brief review is not to pit these two books against each other, but rather to read them through and alongside one another, asking what each adds to or reveals about the other’s hope.

## A New World of Humanity

Thomas D. Seeley’s *Honeybee Democracy* provides a brief introduction to honeybee behavioral ecology, followed by an account of over six decades of research into one specific question: the decision-making process of a swarm of bees picking a site for a new hive. Appropriately – one might say – for a book whose central trope is that of naturally grounded, scientifically optimizable, rational democratic decision making, the story of this research begins in Munich ‘in the spring of 1945’ (2010, p. 13), when war-wounded Martin Lindauer, having discovered ‘a new world of humanity’ (ibid.) by attending the lectures of bee specialist Karl von Frisch, sets off on the path of bee ethology. Observing the dances of a number of bees on the surface of a swarm, Lindauer is struck by the fact that these dancing bees are covered in different kinds of dirt: red, grey, white, black. These ‘dirty dancers’, Lindauer discovers, are no usual foragers but scout bees, each returning from a different potential hive site in bombed-out Munich: a broken brick wall or sooty chimney, or a forgotten flour chest in an empty house. Thus, from the living ruins of World War II, a new line of research is born into ‘how honeybees make a democratic decision based on a face-to-face, consensus-seeking assembly’ (ibid, p. 1).

In over 200 illustrated pages of engaging prose, the book carries this question methodically through to the present day, tracing not simply the results, but also the experimental and observational work, with its surprises, difficulties and contingencies, which underlies current understandings of key elements of this problem: what constitutes an ideal nest site from a bee’s point of view; how scout bees advertise potential sites upon their return to the swarm; how an agreement is reached; the extent to which this agreement reflects the objective qualities of the potential site; and the way in which the swarm is put into motion and guided to the chosen site. In the margins of this account, the book offers a highly

readable and often wry autobiographical narrative of a scientific and personal passion: we see the author as a teenage amateur bee-keeper, as a doctoral student learning from failures and successes; we follow his career and collaborations, until, in the final chapter, we find him in his current position as Head of the Department of Neurobiology and Behaviour at Cornell, applying to his own faculty decision-making processes the organizational lessons learned from *Apis Mellifera*.

Indeed, an organising trope of this book is that ‘these six-legged beauties have something to teach us about building smoothly functioning groups, especially ones capable of exploiting fully the power of democratic decision making’ (p. 3). The argument, in brief, is that swarms achieve ‘nearly optimal decision-making’ owing to a multiplicity of evolved strategies, including: scout bees’ innate sense of the quality of a potential hive site; their honest signaling upon return to the hive; the robust procedure of recruitment, whereby new scouts enticed by the dances of returning scouts are never simply ‘convinced’ to join in the dancing, but rather go check the quality of the site for themselves; and finally, scout bees’ tendency to lose interest over time in the site they advertise, which makes them flexible and avoids deadlocks early in the decision-making process. In Chapter 9, Seeley relates this model of swarm decision making to current models of information-processing and decision in primate brains, suggesting through a detailed point-by-point comparison that both cognitive entities, the swarm and the brain, might evidence the convergent evolution of ‘the same decision-making scheme precisely because it provides a good approximation of optimal decision-making’ (p. 217).

With the invisible hand of evolution thus onside, the final chapter goes on to suggest some lessons for optimising the human democratic process. Here, we are introduced to an additional instance of convergently evolved decision-making entity: the New England town meeting, ‘which has existed for more than three centuries and is arguably the most authentic form of human democracy in the world’ (p. 219). Students of human society are likely to shudder somewhat at this point, as Evolution, Neuroscience and Authentic Democracy neatly dovetail into a set of recommendations: the ‘Five Habits of Highly Effective Groups’ (ibid.). Indeed, they may have been shuddering intermittently throughout, like bees primed for take-off, unless they happen to be the specific kind of social scientists to whom this book is addressed, namely those whose primary aim is to



'search for ways to raise the reliability of decision-making by human groups' (p. 2).

## Swarm Theory

The rest of us may find it helpful to read *Honeybee Democracy* in tandem with another, very different book: Jussi Parikka's *Insect Media*, the latest offering in the Minnesota University Press Posthumanities Series. The two are very different animals. Seeley's book is about swarms; this 'aboutness' clearly organized in terms of careful metaphors, analogies and structured arguments, just as the swarms themselves are patiently watched, breathlessly run after, occasionally gassed with cyanide ('I felt sad to have killed a whole colony, but also excited, knowing that I was the first human to describe in detail the natural homes of honeybees'; 2010, p. 49), but more often lovingly and carefully coaxed into traceability, their bees painted, numbered and followed, their movements filmed and decomposed by computer vision algorithms ('It is hard to convey in words what it is like to go from watching thousands and thousands of swarm bees swirling over head in seemingly random motion, to seeing graphs that show wonderfully clear patterns in their movements'; p. 191), and, finally, rebuilt as mathematical models (pp. 210–211). The book may be about swarms, but it has a strikingly 'vertebrate body plan' (Parikka, 2010, p. xvii, after Shaviro, 1996).

Parikka's book, by contrast, *is* a swarm, its aboutness transformational and shifting. To be precise, the book is a particular kind of swarm: not the brain-like swarm, such as the 'spatial algorithmic form' (ibid, p. 198) that emerges, for instance, from Seeley's account, but the swarm as Parikka, following Eugene Thacker, wants us to think it, 'as a folding between the topological multiplicity and as a phenomenal entity that unfolds in time' (ibid.).

A fold in a topological multiplicity: organizing artifacts such as metaphor and analogy are eschewed throughout *Insect Media*, as are grids, structured demonstrations and settled periodizations, in favor of a multiply folded assemblage of singularities. The book offers 'key case studies, all of which address a transposition between insects (and other simple forms of life) and media technologies' (ibid, p. xiii). Media, here, is understood in the broadest sense – or rather, 'media' is a concept whose expansion and reformulation is precisely one of the aims of the volume (under which conditions, of course, no initial definition will do, because 'basically anything can

become a medium'; p. xviii). The discussion coalesces, in practice, around key figures: Von Uexkull, von Frisch, Bergson, Gilbert Simondon, C. Lloyd Morgan, J. J. Gibson, Roger Caillois, Whitehead, William James, Samuel Butler, are among the many leading figures here, each leading in a slightly different direction, each a scout bee dancing a slightly different dance. Given their centrality throughout, one might be tempted to say that 'Deleuze (and Guattari)' (ibid, p. 79) are the composite queen of this theoretical swarm – which is not to say, as Seeley reminds us, 'the Royal Decider. Rather she is the Royal Ovipositer' (2010, p. 5). Not a despot, just a multiply generative source, a theoretical 'heart of the whole operation' (ibid.).

*Insect Media* is also a phenomenal entity that unfolds in time. The conventional division of the book into chapters is constantly, rhizomatically deterritorialized by references back and forth, as gridding dissolves into becoming ('Chapter 2 continues the idea ... the next chapter continues along the route ... similar themes are continued in Chapter 6 ... Chapter 7 continues along cinematic lines ...'; pp. xxx–xxxiii). This flow is bisected, however, by a 'theoretical intermezzo' (pp. 113–119) that divides, or rather folds, the book into two. The first four chapters explore the mutual capture of insects and Euro-American technology, science and philosophy during the nineteenth and early twentieth centuries. This archaeological exercise disturbs settled images of nineteenth-century modernist humanism, which are often invoked as a striking backdrop for the contemporary posthuman, insect-shaped turn in scientific, cultural and philosophical landscapes. On the contrary, Parikka shows, Euro-Americans have been becoming-insect for a long time. Parikka points to the often-overlooked feedback between the rise of entomology and the development of various technological innovations (electricity, telegraphy, railroads and so on). From the mid-nineteenth century on, insect effects, in their radical otherness, became a new terrain of exploration and capture for increasingly sophisticated scientific machinery, as in the work of Etienne-Jules Marey. In return, bees, spiders and other 'icky animals' (p. xiii) did not simply offer new mappable models of machinic sophistication; they also infected technology, philosophy and social theories with a new alienness and new potentialities: swarms and emergence, via Morton Wheeler and Lloyd Morgan; temporality and instinct, via Bergson; mimicry and schizophrenia, via Roger Caillois. These and other intellectual figures that loom large in the current posthuman turn (Von Uexkull, Whitehead, James and

so on) are glimpsed, peering out of the past, all covered in insects.

In the second half, the book folds over into an account of media as insects, beginning with the post-World War II rise of cybernetics, and carrying through the marriage of neo-Darwinism with new computer technologies, leading through to the entertainment swarms of video games (SimAnt) and the flock simulations (boids), which are now increasingly commonly used in Hollywood movies in the creation of group scenes. The final chapter unpacks the 2002 film *Teknolust* as an example of feminist media art in which mimicry, copying, reproduction and sex proliferate across scales in a micropolitics of posthuman shifting, which in fact takes us rather far from the book's original focus on insects. Such, however, are the contingencies of swarming as literary form.

The book's directional focus and coherence in movement are nonetheless impressive ('How do ten thousand bees accomplish this magnificent feat of oriented group flight?'; Seeley, 2010, p. 176). This is partly because Parikka is not attempting here to trace the intellectual history of posthumanism (or, indeed, of insects) in the traditional sense: rather, his temporality is reversible, and we suddenly find Gibson's affordances in amongst Caillois's accounts of space, Deleuze amidst Bergson, who comes to us partly via Grosz ('Here, Grosz points towards thinking of Bergson as a precursor to contemporary artificial life scientists ...'; p. 19). While historical context is kept in view throughout, a few key theorists nevertheless reach over, across, or back in time to continue, explain and guide the swarm of philosophers, scientists and other thinkers ('... a small minority of the bees in an airborne swarm do whizz through it at the maximum flight speed of a worker bee ...'; Seeley, 2010, p. 188). The pheromone trail of theory these guides lay down is a complex and heady mix of partly overlapping designations: biophilosophy, eco-ethology, neomaterialism, nonrepresentational theory, posthumanism, radical empiricism, ecosophy.

## Crossings

Seeley describes an experiment designed to test the mechanisms of swarm guidance: swarms are positioned in such a way that the path to their intended nest box crosses at right angles the path of regular foragers from another set of hives (2010, pp. 193–195). Confused by cross-cutting visual signals, nearly

all the swarms were scattered or thrown off course. However, somewhat surprisingly, running Seeley and Parikka orthogonally to each other, as I have been doing here, produces less disturbance.

Some collisions are unavoidable, of course. I am not sure, for instance, what Seeley would make of Parikka's nonrepresentational reinterpretation of von Frisch's research on bee communication (2010, p. 129). However, the relative absence of the word 'democracy' in *Insect Media* is perhaps a more interesting – because broader – case in point: the kind of biological optimizing procedures that Seeley treats under the label of democracy feature in Parikka more commonly under the heading of 'capitalism' (pp. 30–32, pp. 204–205). This terminological mismatch is thought-provoking. On the one hand, it leads one to reflect on a certain political flavor of Seeley's bee utopia: 'an enviable harmony of labor without supervision' (p. 66), an 'open and fair competition of ideas' (p. 66) leading, where possible, to 'a dissent-free decision' (p. 118). Furthermore, the metaphor of honeybee *democracy* does require some significant conceptual stretching, as its participants are depicted as nonintentional, motivated directly by an innate sense of attraction toward a good hive, unable to compare options, but tempered by the brevity of their interest in their chosen object. As metaphors go, that of consumers trying out for themselves alternative advertised products does seem at least as apposite here as that of citizens engaged in democratic debate. Together with the absence of the term *democracy* in *Insect Media* (where politics primarily seems to take the form of a tension between 'capitalist biopolitics' and 'a critical ethos of difference and ecosophy'; pp. 204–205), all this raises the complex question of whether and in what form *democracy* remains a relevant category under posthumanism.

Mostly, however, the books augment each other orthogonally. Parikka can be read as a salutary genealogical complement to Seeley. Elements that emerge with self-evidence out of Seeley's well-lighted prose, such as visions of the bee colony as a superorganism (p. 25), the emergence of superior intelligence from a collective of 'tiny-brained' individuals (pp. 6–8), and more generally, the neat correspondence between mathematical simulation, the zoology of communication and the language of optimization, all find themselves emplotted back into longer and more complex stories, with alternate endings.

Reciprocally, however, Seeley's detailed discussion, in which a love for bees is so intimately married to a



love for data, gives form and conviction to what is perhaps *Insect Media's* most profound point: Parikka's call to 'steer clear of any dualism between intensive animal bodies and diagrammatic control as a vampiric capture of those potentials. The overall picture is much more complex [...]. It is through the diagrammatic framing of animals' bodies that an understanding of the intensities, an excess, of those bodies emerges' (pp. 201–202). Of course, there is the honey laced with cyanide, lest we forget that there can be a hiatus between bees and data, between insects and technology, between loving understanding and deadly intervention. Nevertheless, despite the hiatus, the appeal of Seeley's book is in a great part derived from the care with which he asks what matters to the bees themselves (a sure recipe for advances in ethological knowledge, as Vinciane Despret has pointed out; 2002): after millennia of trying to fit bees into boxes convenient for human purposes, and ruining their annoying habit of swarm-

ing off in spring, humans have finally paused to ask what it was that bees themselves seek in a home (Seeley, 2010, p. 44). Beyond the political metaphor and the technical capture, *Honeybee Democracy* remains first and foremost a book full of bees, a book overtaken by wonder. Good news, perhaps, for the second of those two hopes.

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## Small hopes: Humans and the study of insects

Hugh Raffles

*Insectopedia*. Vintage, New York, 2010, US\$11.53, ISBN: 978-1400096961

Edward O. Wilson

*Anthill: A Novel*. W. W. Norton & Company, New York, 2010, US\$16.46, ISBN: 978-0393071191

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In their 2010 essay 'The Emergence of Multispecies Ethnography', S. Eben Kirksey and Stefan Helmreich survey the burgeoning field of interspecies ethnography. 'Amid apocalyptic tales about environmental destruction', they write, 'anthropologists are beginning to find modest examples of biocultural

hope ...' (p. 545). The curious phrase 'biocultural hope' lends itself to two readings. In one sense, it can be understood to refer to sites in which human culture and biological life are finding their symbiotic footing. This kind of biocultural hope is inscribed in the moral imperatives of an environmentally friendly future, and pretty well describes the brand of hopefulness one finds in Edward Wilson's *Anthill*. Alternatively, biocultural hope may indicate an approach to interspecies relations where both 'bio' and 'cultural' cross species lines and for which a certain epistemological generosity of spirit toward 'animal others and familiars' is required as a starting point (Kirksey and Helmreich, 2010, p. 551). This approach, rather than fixing assumptions about life at the lowest possible sum of behavioral output, starts with a sense of fullness and wonder. Its aim is to find or cultivate encounters that bring about mutual transformation. Hugh Raffles' *Insectopedia* is an excellent example of this sort of hopefulness.

Wilson is one of the most prominent progenitors of sociobiology, a theory he has tweaked, but mostly stuck by for some 40 years. When sociobiology first gained prominence in the 1970s, its proponents reinvigorated a search for biological and inherited determinants of human and animal social behavior. The resistance to sociobiology was immediate, and

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