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Media Ecologies and Transcendent Technology in Richard Powers's *The Overstory*

PLANT PERSPECTIVES
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ABSTRACT

Often cited as a preeminent text of contemporary environmental fiction, Richard Powers's *The Overstory* is a literary attempt to bridge the gap between the human and the nonhuman and reveal the entanglement of their shared ecological well-being. The novel carries out this project by providing vegetal lifeforms, specifically trees, with some communicative capacity. They are able to express themselves, both through chemical signals, relayed across networks of fungi and other organic lifeforms, and through an affective, transcendental mode of communication. Powers therefore evokes both the scientific discourse around the so-called 'Wood Wide Web', and the Romantic notion of nature as a vector for transcendent experience. However, through its emphasis on a nonhuman media ecology and on technology as a mode of communication, *The Overstory* also reveals how, in the context of the Anthropocene, technological mediation has become inescapable in any interaction with nature.

KEYWORDS

Anthropocene, ecology, digitality, transcendence, post-anthropocentricism, environmentalism

INTRODUCTION: ENTANGLED IN THE WOOD WIDE WEB

Within the discourse surrounding the Anthropocene, the competing claims of kinship and anthropocentricism work on each other dialectically, without reaching any sort of final conclusion. This contestation reveals the shifting meanings attributed to nature within the Anthropocene, an era in which a self-conscious awareness of environmental degradation is inescapable. While anthropocentricism reflects the realities of capitalist accumulation and extraction, the claims of ecological kinship are often tied up with forms of environmentalism, in which a potential alternative means of understanding and interacting with nature – one based on conservation, symbiosis and communication – comes to the fore. Within contemporary literature, environmentalism has manifested an eco-poetics that seeks to renew and revise conceptions of the natural world, while also offering a politics for resisting the environmental degradation registered by the concept Anthropocene. This is the challenge taken on by

Richard Powers's novel *The Overstory*, which makes a claim for a model of symbiotic ecological thinking as a reflection of actual embodied existence. In doing so, it reveals how conceptions of nature within the Anthropocene have been modified to suit both a digital era of technological saturation and one in which ecological concerns have taken on a radical tenor.

The Overstory's response to these concerns is to attempt to give nature a voice, one that is to some degree legible to humans.. Trees are depicted as communicative entities, able to transmit meaning both through chemical signals (the discovery of which is dramatised within the novel in the tale of scientist Patricia Westerford) and through networks of connection that both include and exceed the human characters of the novel. The novel takes as its starting point the contemporary discourse about the 'Wood Wide Web'; an understanding of nature in general, and trees and fungi in particular, as participating in a form of networked communication that mirrors digital networks. Merlin Sheldrake, one of the most prominent theorists of this phenomenon, describes such communication as the passage of 'a variety of substances, from nutrients to signalling compounds' between 'plants via fungal connections'. According to Sheldrake, this implies that 'plants are socially networked by fungi', although, as he notes, the networks established between such distinct forms of vegetal life are 'inconceivably complicated' and their implications are 'huge and still poorly understood'.[1] Powers has cited the ideas around the Wood Wide Web, or 'Nature's internet', as the concept has been labelled, as a fundamental inspiration for the book, describing such forms of communication as an example of trees being 'wired up' in 'complex and identifiable ways' that are based on symbiosis and reciprocity. As Powers stated in an interview with the *New York Times*, the 'reciprocal interdependence and cooperation across

1 Merlin Sheldrake, *Entangled Life* (New York: Random House, 2020), p. 17; It is worth noting that many scientists have contested the Wood Wide Web theory of tree communication and have suggested that its claims of interspecies communication go too far. Sheldrake himself has admitted that the metaphor of the Wood Wide Web is problematic, as it suggests a model of 'caring, sharing, and mutual aid' that doesn't exist in nature: Sheldrake, *Entangled Life*, p. 152.

the species barrier' evident in this type of tree-fungi communication introduced a 'whole new way of looking at a forest' to him.[2]

The broad cultural appeal of the Wood Wide Web may lie in its ability to register the complexity of the natural world, a complexity that mirrors the opacity of the technological systems upon which it is modelled. A cybernetic ecological system, in which a series of feedback loops within an interconnected network determine potential growth and development, is given material form by such a conception. As Robert Macfarlane noted in a *New Yorker* article on Sheldrake's work, attempts to map the 'intricacy of relation' of fungal connections between plants were reminiscent of 'attempts ... to map the global Internet: a firework display of meshing lines and colours'.[3] The imposition of the technological upon nature, the modelling of ecological forms of being in terms of networked digitality or cybernetic systems, and the opacity that the biosphere therefore accrues, also play out in literary form in *The Overstory*. From this perspective, the discourse around the Wood Wide Web, and related forms of technologised nature, risks reiterating the idealisation of nature in an inverse form; through its ability to co-opt technological models, nature becomes a synthesised, computable and ultimately quantifiable quantity, an extractible resource. These ideas therefore do little to redress the separation between the social and the environmental that is at the heart of capitalist conceptions of nature. Given all this, we can see how the spectre of idealisation returns again in a more synthesised biotechnological form within the Wood Wide Web.

In the novel, Westerford is depicted as a pioneering researcher into tree communication who has her findings ridiculed by the larger scientific community, before eventually being vindicated as others catch up with her research (her story is based on the life of Canadian scientist Suzanne Simard, who first introduced some of the ideas behind the Wood Wide Web to the world of dendrology). What Westerford discovers is that 'wounded trees send out alarms that other trees smell'. The maples she studies signal each other in 'an airborne network' and could

2 'Richard Powers on What We Can Learn From Trees', *The New York Times*, 28 Sept. 2021: https://www.nytimes.com/2021/09/28/opinion/ezra-klein-podcast-richard-powers.html

3 Robert Macfarlane, 'The Secrets of the Wood Wide Web', *The New Yorker*, 7 Aug. 2016, https://www.newyorker.com/tech/annals-of-technology/the-secrets-of-the-wood-wide-web

therefore be said to share 'an immune system across acres of woodland'.[4] Her conclusions suggest that a forest functions on the basis of cooperation and interdependence, to the extent that an individual entity is hard to discern: 'There are no individuals. There aren't even separate species. Everything in the forest is the forest. Competition is not separable from endless flavours of cooperation.'[5] Westerford's empirically established ideas are counterposed by an apparently transcendental form of tree communication, one that evokes the Romantic conception of nature as a site of the sublime, in which, as Thomas Weiskel writes, 'nature appears as the medium through which the mind discovers and presents itself, in eddies of separation and reunion'.[6] The ecosystems Powers depicts are therefore ones in which two tracks of networked communication operate simultaneously: one, based on the chemical signals that have been found to flow among trees and between them and other plant forms, and the other an affective, emotive interplay that occurs beyond the realm of the physical. This form of communication, which veers into the transcendent and epiphanic, prompts characters to turn towards environmentalism, either in the form of making small gestures of conservation or of taking radical and sometimes violent action against deforestation and related industries.

TREE TEXTS AND KINSHIP COMMUNICATION

All nine central characters of Powers's text have the trajectories of their lives altered by their encounters with the transcendent media of what Garrett Stewart calls the 'quasi-personified tree forms' that populate the text.[7] The stories of these characters' lives then go on to overlap and intersect as they attempt to grapple with the vitality of the tree-life they have gained an inkling of, and the importance of preserving it. Throughout their interconnected tales, trees, as Stewart states, come to

4 Richard Powers, *The Overstory* (New York: W.W. Norton & Company, 2018), pp. 125–26.

5 Ibid., p. 142, emphasis in original.

6 Thomas Weiskel, *The Romantic Sublime* (Baltimore: John Hopkins University Press, 2019), p. 6.

7 Garrett Stewart, 'Organic reformations in Richard Powers's *The Overstory*', *Daedalus* **150** (1) (2021): 160–77, at 161–62.

occupy 'choral-speaking parts' within the text: – 'animated, communicative, bearing witness' in ways that are evident not only in the passage of the narrative, but in the language Powers employs: rich with allusive terminology and environmental metaphors, it is what Stewart calls a 'hypertuned vocabulary', full of 'forest lingo' and 'puns, echoes, and harmonic overtones'.[8] This is mirrored on a structural level by the section titles, with their taxonomy of the growth cycle of a tree. The novel's self-consciously organic form foregrounds the analogical relationship between text and tree.

Just as trees serve as a formal model for the novel, as well as providing inflection points in the characters' lives, they also function on a diegetic level as books that can be read. However, the degree to which these organic lifeforms are in fact legible is persistently put into question; on the one hand, they are characterised as repositories of biochemical information, revealing ancient histories that far outstrip human time and, on the other, they are inscrutable, opaque beings capable of a form of communication that can only be glimpsed by the human characters. This duality between legibility and opacity is one that resonates profoundly with Romantic conceptions of the sublimity of nature, and echoes a broader duality central to the Anthropocene: the technoscientific rationalisation of nature, in which environmental value is comprehensively knowable and extractable, and the ecological imperative toward respecting the boundaries of nature. The tree, or in this case an object produced from it – a wooden desk in a prison cell – is a 'text' that is 'unreadable':

> If he could read, if he could translate ... If he were only a slightly different creature, then he might learn all about how the sun shone and the rain fell and which way the wind blew against this trunk for how hard and long. He might decode the vast projects that the soil organised ...[9]

Trees are technologies for encoding their own history, and that of the web of life in which they are woven, but the code in which they write is not entirely legible to humans. The conditional 'if' suggests, nonetheless, that a 'slightly different creature' could read such a script, and that such a form of (posthuman) ontology may emerge through such an embrace of the more-than-human.

8 Ibid.

9 Powers, *The Overstory*, p. 155.

The manner in which the novel's interspecies communication breaches this boundary of legibility is through recourse to the uncanny, which Powers makes apparent through the epiphanic moment of interconnection experienced by Olivia Vandergriff after a near-death experience:

> The car is filled with beings of light. They're everywhere, unbearable beauty, the way they were the night her heart stopped. They pass into and through her body … They're part of her, kin in some way that isn't yet clear. Emissaries of creation – things she has seen and known in this world …[10]

A connection with nature is here figured as a form of sublime transcendence – an embrace of the materiality of nature through an encounter with immaterial 'beings of light'. These beings, which express to her the vital importance of protecting the biosphere, are manifestations of the processes of creation and kinship within that biosphere; they reveal to her an extended notion of family that includes vegetal life, while also suggesting that they are 'emissaries' of a different mode of materialising memory, one that is underlined by the deep time of nature. The epiphanic experience provided by a profound attention to nature is here paradoxically expressed in terms of immateriality and the encoding of information within that immaterial vector, one situated within a transcendent realm.

Communication is therefore established as the basis of kinship, as trees 'pour out messages in media of their own invention' and humans, and other lifeforms, are established as the object of such media.[11] The description of trees as producers of media is crucial here, as it shows how Powers establishes a form of media ecology as a predicate for interspecies communication. In the text, the analogy of nature as media structures the understanding of communication, in a way that transforms organic lifeforms into nodes that continually, and automatically, transmit information. This information may come in the form of biochemical signals or even the excretion of organic matter, itself expressive of some form of biological process, or it may operate on a transcendental plane. Thus, natural processes, human activity and interspecies connection all become subsumed within the paradigm of informatic communication. The depiction of these forms of communication as redolent of

10 Ibid., p. 163.

11 Ibid., p. 355.

technological forms of communication is evident in the lexicon Powers uses to describe them: 'media', 'frequencies', 'networks', 'cabling' – all of which point towards a construction of communication as essentially technological in nature, while the networked form is given primacy not because of its organic basis but because it resembles or models digital communication.

IMAGINING ALTERNATIVE ONTOLOGIES

At the outset of the opening section of the novel, 'Roots', Powers sketches out a scene that suggests that an analogy between organic and technological forms of communication will be operative within the text:

> *First there was nothing. Then there was everything. Then, in a park above a western city after dusk, the air is raining messages. A woman sits on the ground, leaning against a pine … Her ears tune down to the lowest frequencies. The tree is saying things, in words before words.*[12]

The pine tree anchors the media ecology in which it sits, and is the central agent within that ecology. Powers designates this agency through the active verbs that reveal the tree-agent in action; it 'presses' against the woman's back, while its needles 'scent' the air and a force 'hums' within its wood. The communication emanating from the tree is at the resonance of this 'hum', it is a radio signal broadcast at the 'lowest frequencies'. The tree speaks in 'words before words' – both language that transcends human modes of communication and language that precedes those modes, since it exists on a timescale that far exceeds that of the human. The evocation of the biblical creation story, '*First there was nothing. Then there was everything*', gestures towards the teleological character of Powers's ontology: trees, or nature as a whole, as organic manifestations of some form of transcendent ethics, from which humans are alienated, at least temporarily. This alienation can be countered by recognising and engaging in the media ecology generated by trees, a process of reception and attention that can reveal the ethical imperative of radical environmentalism.

The tree thus becomes both a vector of communication and a representational interface, one that intimates and gestures in language

12 Ibid., p. 3, emphasis in original.

beyond humanity's scope of comprehension. Nicholas Hoel, an artist who becomes a militant environmentalist as the book progresses, looks up into the chestnut tree that stands sentinel next to his home and sees: 'All its profligate twigs click in the breeze as if this moment ... so insignificant, so transitory, will be written into its rings and prayed over by branches that wave their semaphores'.[13] The tree is thus a text, one with specifically transcendental resonances; it allows for access to a form of collectivity engendered by communicative kinship, but only for those willing to tune in to its frequencies. Kinship across species boundaries therefore, as Powers states, 'will work like an unfolding book'.[14]

Elsewhere in the novel, most notably in the italicised passages preceding each section, communications from trees are materially embodied in their 'needles, trunks, and roots'. These signals of a tree consciousness are 'hundreds of millions of years older' than the 'crude senses' of humanity, but they can nevertheless be legible. They speak of the necessity of 'long answers' and 'long time' – an elaboration of the necessity of embracing the cyclical, deep timescales of nature, which far exceed those of the human. In response to such signals, a watching human thinks of the possibility of engendering a new form of relation to the object world: 'I wouldn't need to be so different for sun to seem to be about sun, for green to be about green'. For the disjunction between figure and ground to collapse, a new ontology must emerge, one tantalisingly within reach. This phenomenological understanding of the lifeforms of nature would transcend the need for 'killing clarity' and allow the 'rings of life and water and stone' to be sufficient, both ontologically and within the circle of interspecies communication, as 'all the words I need'.[15] Nonetheless, although all of the central characters experience some form of communion with trees, Powers makes it clear that, despite trees 'making significance, making meaning as easily as they make sugar and wood', 'humans hear nothing'.[16] Through his intimation of the existence of tree consciousness, one that is not bounded by notions of individuality or even materiality, Powers thus attempts to counter both the obliviousness of humanity to the possibilities of

13 Ibid., p. 23.
14 Ibid., p. 132.
15 Ibid., pp. 355–356.
16 Ibid., p. 168.

dialogic exchange with nature and the rapaciousness of the 'killing clarity' that seeks to control the natural world and extract value from it. Apart from the handful of characters that make up the novel's collective protagonist, humanity is depicted as essentially ignorant of the possibilities of agency or consciousness in vegetal life. By modelling the possibilities of mutuality and interspecies exchange, Powers questions how such ignorance could be countered, if not by the realisation that trees have an awareness and agency of their own.

In depicting his form of interspecies communication, Powers does anthropomorphise trees to some degree, by making them communicate their intentionality in a linguistic form legible to humans. Birgit Spengler points out that this is evidence of Powers's attempt to 'have it both ways': both to 'suspend readers' epistemic disbelief in talking trees' and harness 'the ideas – or words – "voiced" by trees [in] the service of bringing into being a new ontology'.[17] Nevertheless, Powers does manage to foreground a form of relational ontology through his focus on interspecies dialogue. On both a formal and a thematic level, Powers imbues the trees of the novel with characteristics of fluidity, multiplicity and interdependence, highlighting what Spengler calls their 'situated and communal character', with individual trees standing in for a 'story of multiple dependencies, entanglements, and relationality'. Notions of 'human exceptionalism' and 'bounded individualism' are problematised by such a rhizomatic notion of being, which compels a recognition both within the diegesis of the text and on behalf of the reader of the ethical responsibilities of entanglement.[18] Spengler goes on to explain how the novel compels the recognition of alternative ontological forms: 'structure and plot recreate the entangled life forms of trees in order to promote a more-than-human frame of orientation'.[19] The result of such a modelling is that the novel 'can facilitate a new appreciation of plant life and challenge ideas of human exceptionalism even though it destabilizes and counterweighs rather than fully replaces anthropocentric perspectives'.[20]

17 Birgit Spengler, 'Arboreal encounters in Richard Powers's *The Overstory*', in Birgit Spengler and Babette B. Tischleder (eds), *An Eclectic Bestiary: Encounters in a More-than-Human World* (Bielefeld: Transcript, 2019), pp. 65–90, at p. 72.

18 Ibid., pp. 65–72.

19 Ibid., p. 75.

20 Ibid., p. 80.

Not only does this form of ontological multiplicity express a new form of collective intentionality, it also subverts hierarchies that insist on human mastery and control over nature: '*People aren't the apex species they think they are*. Other creatures – bigger, smaller, faster, older, younger, more powerful – call the shots ... without them, *nothing*.'[21] Entanglement implies interdependence, which in turn reveals the necessity of overturning narratives of human exceptionalism. What Powers is attempting here is something akin to what Donna Haraway calls 'webbed, braided, and tentacular living and dying in sympoietic multispecies string figures': a narrative that subverts the 'top heavy and bureaucracy prone' apparatus of the Anthropocene, in favour of the multiplicity of Haraway's 'Chthulucene'.[22] The Chthulucene is 'made up of ongoing multispecies stories and practices of becoming-with in times that remain at stake, in precarious times', in which 'human beings are not the only important actors'. Instead of human exceptionalism, Haraway argues for the reversal of the hegemonic species order: 'human beings are with and of the earth, and the other biotic and abiotic powers of this earth are the main story'.[23]

One way in which Powers creates such a string figure narrative is through his use of timescales that exceed the human. He overlays the diegetic time of the narrative – itself split into an overlapping network of stories – with the deep time of plant life:

> Long ago, the climate changed, and an aspen's seeds can no longer thrive here. But they propagate by root; they spread. There are aspen colonies up north where the ice sheets were, older than the sheets themselves. The motionless trees are *migrating* – immortal stands of aspen retreating before the latest two-mile-thick glaciers, then following them back north again.[24]

Trees not only exist on a timescale that far exceeds the human, they create their own spatial reality in a manner, and at a speed, that is beyond human comprehension. They survive through a form of slow migration and adaptation that takes centuries and largely occurs in the soil; a form

21 Powers, *The Overstory*, p. 285, emphasis in original.

22 Donna J. Haraway, 'Staying with the trouble: Anthropocene, Capitalocene, Chthulucene', in Jason W. Moore (ed.), *Anthropocene or Capitalocene?* (Oakland: PM Press, 2016), pp. 34–76, at pp. 52–53.

23 Ibid., p. 59.

24 Powers, *The Overstory*, p. 133.

of spatiality and temporality that is incommensurable with the systems of production established by humans, that is ultimately sublime in the sense of being dynamically incomprehensible on a human scale, or incomputable on a systematic one. The entanglements within the text then, as Spengler notes, 'take place in space and time; they can reorient concepts of time through the time span in which they take place, but they also interfere with conceptualisations of space through the distances they breach and connections they establish across distances'.[25] Thus, the tempo-spatial reality of trees intersects and overlaps with that of humans, establishing an interweaving within the wider web of life.

Through this dramatisation of the interconnectedness of lifeforms, Powers celebrates a form of collective being based on flux, fluidity and blurred boundaries; the essential imbrication of the human with the other and therefore the impossibility of a truly bounded individuality. What lies behind this impossibility is what Rosi Braidotti calls 'the transversality of relations', which, in Braidotti's understanding, would allow for the emergence of 'a postanthropocentric and posthuman subject that traces transversal connections among material and symbolic, concrete and discursive lines of relation or forces.'[26] In Powers's text this emphasis on transversality aims to stress the ethical imperative of environmentalism for the reader. To establish this ultimate interconnection, however, Powers turns to technology as the final apotheosis of the dialogic exchange between human and nonhuman, and the means by which a 'postanthropocentric and posthuman subject' could emerge.

A TECHNOLOGICAL DETERMINATION

Powers's evocation of technological tropes in the service of establishing his alternative tree-based ontology, and of expressing the way in which cross-species communication both functions and doesn't, reveals some of the ways in which the ecological has become saturated with the technological. Indeed, Powers shows how certain technologically inflected ideas have become hegemonic and inescapable – communication is necessarily a media relation, enacted through and within technological systems; cognition and ecology have become comprehensible primarily

25 Spengler, 'Arboreal encounters', p. 83.

26 Rosi Braidotti, *The Posthuman* (Cambridge: Polity, 2013), p. 94.

through analogy with technological systems, and transcendence is ultimately a manifestation of technological immateriality. As Westerford writes in her book defending the complexity of trees:

> Something marvellous is happening underground, something we're just learning how to see. Mats of mycorrhizal cabling link trees into gigantic, smart communities spread across hundreds of acres. Together, they form vast trading networks of goods, services, and information ...[27]

Trees are imagined here as nodes within a distributed network that is organic, but which models the technological in its manner of processing, storing and communicating meaning to fellow lifeforms and even facilitating a form of organic commerce. For Powers, technology seems to act as the predicate for ontological recognition, which comes to be defined by its adherence to technological models. In this sense, Powers's text can be said to be emblematic of the Anthropocene tendency to refer to technological media systems when conceptualising nature, as both a determinant of the utility of nature and a medium through which nature can be understood. *The Overstory* thus functions as the reverse of what Stewart calls a 'paranoia novel', in which the 'unmastered mysteries of a System in which human energies have found themselves embedded' are expressed. Powers turns this trope inside out so as to 'limn' the 'intricate workings of a vulnerable botanic superstructure and its tongueless signage'.[28] Technology in *The Overstory* offers a glimpse of a techno-organic counterpoint to such a system, one which is similarly manifested as an emergent property of networked systems of vast, overwhelming complexity.

The conflation of the technological and the organic is most clearly laid out in the sections of *The Overstory* focusing on Neelay Mehta, the game designer, who lost the use of his legs at a young age after falling from a tree. Identified as 'the boy who'll help change humans into other creatures', Mehta is ultimately given the responsibility of reconciling the technological and the natural through his games, which are themselves

27 Powers, *The Overstory*, p. 218.

28 Stewart references Don DeLillo and Thomas Pynchon as writers whose work exemplifies the 'paranoia novel', a form that explores how narratives of paranoia, or conspiracy, might be the means by which an individual handles the uncertainty evoked by an opaque systematic reality. Stewart, 'Organic reformations', pp. 164–65.

means of representing and enacting a new understanding of the natural world.[29] As a young boy, he finds in the early coding technology he shares with his engineer father a way of transforming 'his innermost hopes and dreams into active processes'.[30] Particularly after his accident, writing code becomes for Mehta a way of embodying a form of direct creative agency that he is unable to harness otherwise. Both his inspiration for coding and the form which his homemade software takes is couched in terms of organic growth; the biosphere provides both the metaphorical lexicon and the conceptual spark for Mehta's games. The 'worlds' he creates are structured in terms of the programming technique of 'branching', a mechanism that allows Mehta to 'reincarnate himself' 'as people of all races, genders, colours, and creeds'.[31] Powers thus expresses both the liberatory potential of digital technology and its capacity for destabilising the autonomy of the user, a duality that is mirrored in the complex dialectic of materiality and immateriality that exists within the digital sphere. We can also see the ontological fungibility of Mehta's game as a parallel to the critical faults of the Anthropocene concept, which essentialises and homogenises humanity, while neglecting to address the role of economic, race and gender-based systems of oppression and coloniality in environmental degradation.[32]

In *The Overstory*, these conflicts are deepened by Powers's persistent attempt to subsume the digital within the natural or organic: Mehta's programming is described as:

> ... trees that spread like fireworks and trees that rise like cones. Trees that shoot without a ripple, three hundred feet straight skyward. Broad, pyramidal, rounded, columnar, conical, crooked: the only thing they do in common is branch, like Vishnu waving his many arms.[33]

As the reference to Vishnu shows, nature is imbued with the spirit of the sacred, in a return to a mode of environmentalism that took its inspiration from religious discourse and saw the natural world as the site of the numinous. Vishnu is the figure chosen for this comparison

29 Powers, *The Overstory*, p. 92.

30 Ibid., p. 94.

31 Ibid., p. 95.

32 See Jason W. Moore, *Anthropocene or Capitalocene?* (Oakland: PM Press, 2016) for further discussions of the Anthropocene concept's faults and alternatives to it.

33 Powers, *The Overstory*, p. 95.

both because of his status as supreme creative deity within Hinduism and because, like a tree, his multi-limbed form suggests an ontological multiplicity. However, Mehta's encounter is one that occurs only in the realm of the digital interface, and is enacted by the complex duality of freedom and control available to the user there, which offers users a putative form of sovereign freedom, while in fact controlling and monitoring their actions in often opaque ways. The transcendental scope of such an interface is thus always pre-determined, as Mehta the programmer knows only too well.

Nonetheless, what Mehta discovers in code is a form of enlightenment, pointing towards a posthuman future ('the boy who'll help change humans into other creatures') that can be accessed through the apparent freedom provided by digital technology.[34] By mapping Mehta's software onto organic form, which provides an underlying metaphorical language for it, Powers imbues code with the autonomy and liveliness of plants – in effect, he makes the algorithms Mehta constructs into self-replicating automata through the analogy of plant life, which Powers describes as 'the most perfect piece of self-writing code'.[35] Mehta imagines programming as a 'temple-eating fig' from a photograph his father shows him, a fig that will 'keep on growing faster with each new chunk of reusable code. It will keep on spreading, searching the cracks, probing all the possible means of escape, looking for new buildings to swallow'. Although it grows 'under Neelay's hands', it is not quite under his control, but has a life of its own.[36] Mehta is then merely the vector through which this autonomous artificial life manifests, or rather, he is the only person who can perceive the possibilities opened by the apparently invisible processes of computing, which are 'reticent' in the sense of withdrawn from human comprehension:

> Something inside these tiny, mutable components is waiting to get out ... there's something that these reticent things might be made to do, something humans haven't even imagined yet. And Neelay is on the verge of finding and naming them …[37]

34 Ibid., p. 92.
35 Ibid., p. 103.
36 Ibid., p. 95.
37 Ibid., p. 96.

To counter the reticence of these nonhuman beings and activate their autonomous potential makes Mehta 'feel like a God'.[38] The prothesis of these digital technologies expands the scope of human capacities in ways that model a form of divine omnipotence. Transcendence is thus given material form as a digital enterprise, in which in the user expands their perspective and comprehension to a god-like extent by tapping into the epistemological capacities of data-gathering algorithms.

ALGORITHMIC TRANSCENDENCE

In the sections of the novel focusing on Mehta, Powers evokes a notion of digital comprehension that resonates with Wendy Hui Kyong Chun's assessment of the way in which the 'invisibility, ubiquity, and alleged power of new media' lend themselves to an analogy with 'the incomprehensibility of the divine'. Since, as Chun continues, 'it seems impossible to know the extent, content, and effects of new media', software has gained pre-eminence as the reference point for all new media objects, as a 'visibly invisible or invisibly visible essence'. To know software then, has 'become a form of enlightenment: a Kantian release from self-incurred tutelage'.[39] Chun writes that software has become a 'metaphor for the mind, for culture, for ideology, for biology, and for the economy', and as such has provided a language of conceptualisation for fields far removed from that of digital technology – this is certainly evident in Powers's reference to the questions of ecology in terms of technology, and his reliance on a lexicon sourced from digitality to express the wonder of the biosphere.[40]

In Powers's text, the complex interplay of visibility and invisibility, knowing and not knowing, that is enacted through the interface of software is applied to the obscurity of the natural world, which becomes another form of technological medium, one that can be mapped computationally. Particularly in the latter stages of the novel, when he plans a game that will create its own totalising landscape – a map that can encompass the territory – populated by the myriad lifeforms of the natural

38 Ibid.

39 Wendy Hui Kyong Chun, *Programmed Visions: Software and Memory* (Cambridge: The MIT Press, 2011), p. 1.

40 Ibid., p. 2.

world, Mehta becomes the embodiment of what Chun calls the 'seemingly sovereign individual, the subject driven to know, driven to map, to zoom in and out, to manipulate and to act'.[41] That sovereignty is, however, not total, but shared with the autonomous algorithms that populate Mehta's system, algorithms that make users themselves the object of their knowledge gathering enterprises. The contingency represented by this systematic autonomy means that, as Chun argues, 'computers execute in unforeseen ways, the future opens to the unexpected' and, therefore, 'any programmed vision will be always be inadequate'.[42]

Just as his software is conceived of as an organic creation, Mehta finds inspiration for his games in nature, specifically in an encounter with a sempervirens tree, a coast redwood that is 'beyond comprehension' in size; 'an immortal, collective ecosystem'. The incomprehensibility of the tree's magnitude is framed in terms of a panentheistic collective deity – 'All the world's trunks come from the same root and are rushing outward, down the spreading branches of the one tree' – and of the totalising interface of software: 'think of the code that made this gigantic thing ... How many programs is it running?'[43] Paradoxically, despite his encounter with incomprehensible tree-life, Mehta calls one iteration of his interplanetary adventure *Mastery*, designating the manner in which it seeks to tear down the veil of incomprehension and reaffirm the sovereignty of the user.[44] It also establishes the way in which the game, and the notion of 'play' within the digital sphere in general, becomes a vehicle for alleviating the contingency of what Mehta's staff call 'RL' or 'Real Life'.[45] Within the game,

> the player will start in an uninhabited corner of a freshly assembled new Earth. He'll be able to dig mines, cut down trees, plough fields, construct houses, build churches, and markets and schools – anything his heart desires and his legs can reach … But there's a kicker: other people, real people, on the other end of modems, will each be furthering their own culture in other parts of this virgin world. And every one of those other, actual people will want the land beneath any other player's empire.[46]

41 Ibid., p. 8.
42 Ibid., p. 9.
43 Powers, *The Overstory*, p. 197.
44 Ibid., p. 198.
45 Ibid., p. 226.
46 Ibid., p. 198.

Mehta's game thus figures the complexities of social systems but makes them objects capable of colonial mastery, in a mappable terrain in which characters can achieve 'enlightenment', as one 'overpowered victory strategy' is named, and in which they must engage in competition with other players.[47] The visual representation then becomes less important than the scope for sovereign agency offered to the users, who are able to imbue their actions with global consequences through the gaming interface; within the game, 'the visible is only a placeholder for real desire'.[48] Here, the totalising interface of the game, itself a mask for the desire of its users, can be seen as a manifestation of what Chun calls the 'wish for a simpler map of power', for 'power as mappable', which underpins the notion of 'code as automatically executable' and 'interfaces more generally'. Chun argues that 'this wish is central to computers as machines that enable users/programmers to navigate neoliberal complexity'.[49] The desire for such a means of mapping uncertainty is made evident in the text by the exponential growth of Mehta's game; it becomes a global phenomenon in line with the growth of the online gaming industry, as '*Play* becomes the engine of human growth'.[50]

What Mehta comes to find unfulfilling about this game is its inability to truly map the complexity of the natural world, and to therefore offer some means of actual material impact – he questions why users 'give up an endlessly rich place to live in a cartoon map?'[51] Instead, he proposes a game that will allow them to 'learn what the world will bear, how life really works, what it wants from a player in exchange for continuing to play', a game in which characters must play with the goal of 'growing *the world*, instead of yourself'.[52] While *Mastery* offered users the ability to map and thus control the contingency of the world, to establish themselves as sovereign and visualise the unknown, Mehta seeks a game that could foreground the imperative of relating positively to the biosphere, and building an epistemology based on the organic tropes that initially motivated his programming career. He finds this

47 Ibid., pp. 225–226.
48 Ibid., p. 226.
49 Chun, *Programmed Visions*, p. 28.
50 Powers, *The Overstory*, p. 276, emphasis in original.
51 Ibid., p. 412.
52 Ibid., p. 413, emphasis in original.

in a short film sent anonymously to him entitled 'Words of Air and Light', depicting a sped-up series of photos that record the growth of a chestnut tree, a film, the text suggests, produced by Hoel. In the film, which looks like a 'hand-cranked kinetoscope', Mehta sees 'the tree's central aim, the math behind the phloem and xylem, the intermeshed and seething geometries, and that thin layer of living cambium swelling outward'. Provided with this technological glimpse of tree-time, Mehta views the growth of the chestnut in terms of code – a 'wildly branching code pruned back by failure' – one that provides the viewer with an epiphanic encounter with a transcendental other, existing beyond and within human timeframes and ontologies.[53]

Mehta's response to this film is to create a new computer programme, one that fulfils his aim of establishing a more reciprocal relation to the natural world. It is described as a 'growing organism', a 'venture into cooperation', in which 'creatures swallow up whole continents of data' based on pre-existing 'digital germplasm'. The aim is to 'find out how big life is, how connected, and what it would take for people to unsuicide. The Earth has become again the deepest, finest game, and the learners just its latest players.'[54] The 'learners' are autonomous algorithms within the programme whose task it is to collect data and knowledge on ecological matters and the well-being of the biosphere, and then collectively absorb that information as a means of establishing some interspecies relation between vegetal life and humans, a relation mediated by technology. In fact, these autonomous programmes exist in the space between the organic and the technological that Powers has mapped out throughout the book: they 'come to think like rivers and forests and mountains' and will 'learn to translate between any human language and the language of green things'.[55] They represent the apotheosis of Powers's project of finding some analogical relation between the organic and the technological, as categories of nonhuman being, and applying that analogical connection as a means of furthering the ontology of interspecies mutuality he is attempting to celebrate. The 'learners' are counterposed to another message of environmentalism,

53 Ibid., p. 435.
54 Ibid., p. 482.
55 Ibid., p. 496.

this one made by Hoel out of dead trees and apparently legible only from high above:

> The transported pieces of downed wood snake through the standing trees. Satellites high up above this work already take pictures from orbit. The shapes turn into letters complete with tendril flourishes, and the letters spell out a gigantic word legible from space:
>
> STILL

Trees thus become means of communication again, expressing a message of persistence and attention – the imperative to be 'still' as well as the imperative to remain – but for an audience that is mainly digital: 'the learners will puzzle over the message that springs up there ... But in the blink of a human eye, the learners will grow connections.'[56] These learners represent the ultimate synchronicity of digital and organic life and, with their drive to collect, to read, to see and to understand, they are examples of what Stewart calls the 'epistemic urge' replacing the 'ludic'; 'the empty eschatology of total mastery over a fictive universe becomes instead the eponymous overstory of documentary narrative, open-eyed and investigative'.[57] Operating beyond the scope of human comprehension, at speeds and timescales unimaginable to the human perceiver, they are the ultimate posthuman entities proposed by Powers: mapping the geometry of the biosphere, quantifying and computing the vegetal world, these algorithms represent the subsumption of the Romantic, natural sublime – the unknowable mystery of nature, in which the self becomes boundless – within the technological sublime – technology as the figure for our failure to represent the systematic complexity of the web of life and the place of the individual within it.

CONCLUSION: UNTANGLING NATURE AND TECHNOLOGY IN THE ANTHROPOCENE

What are the implications of this recourse to the technological as a means of incorporating the nonhuman – particularly in a text that is explicitly opposed to the quantifying, disembodied gaze of capital on

56 Ibid., p. 502.

57 Stewart, 'Organic reformations', p. 170.

the natural world? Is it necessary for the model of collectivity proposed at the climax of the text to be one derived from apparently autonomous digital technologies, or is it possible that this in fact reveals how digital technology derives its model of networked existence from some other precedent – ecology itself? Powers, in his attempt to reconcile the human with the lifeforms of the biosphere, introduces technologically instantiated beings that to some degree recapitulate the discursive construction of nature as object of knowledge (rather than being imbued with agency as earlier in the novel), as entirely computationally legible, and as a vector for patterns of information that can be removed from their source – the tree as text – and utilised as raw data. Of course, Mehta aims not to use this technology on behalf of capital, but as a positive ecological force. Nonetheless, it is necessary to question whether Powers does not replicate some elements of the discursive construction of nature-as-resource that he is otherwise attempting to upend through this final fusing of the technological and the organic.

By attempting to foster a form of collective technologically facilitated consciousness, Powers inescapably evokes the global systems of both assemblage and oppression that operate through digital technologies, forcing the reader to question whether such technologies can be turned to ecological purposes as Powers imagines and leaving a pervasive sense of indeterminacy and ambivalence lingering over the entire environmental project of the text. What then of the Anthropocene and the conception of nature that has underpinned it? In this reading of Powers, we can see that he applies a vitalist approach to materiality, that he, in Braidotti's terms, 'displace[s] the boundary between the portion of life – both organic and discursive – that has traditionally been reserved for *anthropos*, that is to say *bios*, and the wider scope of animal and nonhuman life'. He does so by underscoring the 'generative vitality' of the natural world and establishing a form of 'transversal force' that 'cuts across and reconnects previously segregated species, categories and domains' – in Powers this occurs through a tree-based ontology, one with a profoundly nonhuman set of spatial and temporal imperatives.[58] Within *The Overstory*, there is an attempt to deconstruct what Braidotti

58 Braidotti, *The Posthuman*, p. 60; for an in-depth investigation into the possibilities of a tree ontology, see Sarah Abbott, 'Approaching nonhuman ontologies: Trees, communication, and qualitative inquiry', *Qualitative Inquiry* **27** (8–9) (2021), https://doi.org/10.1177/1077800421994954

calls 'species supremacy' and inflict a blow to 'any lingering notion of human nature, *anthropos* and *bios*, as categorically distinct from the life of animals and nonhumans'. In place of such supremacy, what comes to the fore is 'a nature-culture continuum in the very embodied structure of the extended self'.[59] For Powers then, as for Braidotti, transversality represents an 'ethics and ... a method to account for forms of alternative, posthuman subjectivity. An ethics based on the primacy of the relation, of interdependence.'[60]

However, lingering within such notions of interdependence, as the 'machine in the ghost', is the spectre of a technological rapprochement, one that can fulfil the promise of transversality through recourse to a form of technological sublimity – a materially embodied encounter with transcendent symbiosis. Powers establishes an analogical relation between the technological and organic, a relation that will eventually manifest in the attempted algorithmic reconciliation between the human and the nonhuman other in nature. Ultimately, through this manoeuvre, Powers reproduces an idea that seems to underpin the Anthropocene more generally: that nature as a concept is essentially computable, quantifiable, and ultimately knowable. The sublimity of nature is therefore subsumed into the broader sublimity of technology, as nature becomes both, as Thomas H. Ford notes, 'comprehensively textualized' and comprehensively legible.[61] This does not occur on a human scale, but on the scale of a technology that, in attempting to bridge the interspecies gap, to embody transversality, only emphasises the impasse of otherness. What this finally reveals is the way in which nature in the Anthropocene, even when representing an alternative collective ontology, is determined by technological mediation, to the extent that it cannot be untangled from the technological. This determination becomes apparent in *The Overstory* in the way in which the incomprehensibility of the natural world becomes resolved through recourse to the opaque and emergent properties of digital technologies, technologies that, in turn, become vectors of transcendence.

59 Braidotti, *The Posthuman*, p. 65.

60 Ibid., p. 95.

61 Thomas H. Ford, 'The Romanthropocene', *Literature Compass* **15** (5) (2018): 1–13, at p. 11.

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