

## Stages of Transmutation: Science Fiction, Biology, and Environmental Humanism



Nathaniel Doherty

Tom Idema. *Stages of Transmutation: Science Fiction, Biology, and Environmental Humanism*. Routledge, 2018. Hardcover. 176 pp. \$140. ISBN 9780415788229.

PART of the *Perspectives on the Non-Human in Literature and Culture* series, Tom Idema's *Stages of Transmutation: Science Fiction, Biology, and Environmental Posthumanism* roots itself squarely in contemporary European posthumanism (with a feminist inflection). Idema's introduction helpfully sketches out what he means by the term "posthumanism," noting specifically the strain of posthumanism preoccupied with transformation and relationships between species and environments. From here the chapter proceeds to define and situate the book's central premise, outlining the idea of environmental posthumanism as it manifests in Octavia Butler's *Lilith's Brood* novels (1987-89), Greg Bear's *Darwin's Radio* (1999), Jeff VanderMeer's *Southern Reach* trilogy (2014), and Kim Stanley Robinson's *Mars Trilogy* (1992-99). Each chapter pairs a few key, usually somewhat current and innovative, scientific concepts with Idema's reading of a primary SF text in order to suggest that human transformation in response to environment can be read productively through the lens of environmental posthumanism in both fiction and science. Because Idema brings his scientific sources into relief through heavy use of citation, this text can serve as a primer on the scientific background of environmental posthumanism or as an introduction to the resonances between science and general posthuman thought.

Idema's idea is that certain SF texts interface with posthumanist reevaluation of humanity through an emphasis on reduced anthropocentrism. Environmental posthumanism comes into focus when this anti-anthropocentric change is brought about by human characters' interaction with their environments. When Idema lays out his uses of "stages," on which these transformations are elaborated, the book encounters one of its few weak points. This idea of several stages—temporal, spatial, epistemological—complicates the book's central argument about environmental posthumanism in a way that is sometimes more distracting than illuminating.

One of Idema's obvious strengths, however, is his ability to weave a relationship of interpretive collaboration between innovative scientific approaches and science fiction narrative thought. Idema reads science fiction as a “privileged literary genre for thinking about environmental change in a posthuman vein” (7).

In the introduction to *Stages of Transmutation*, Idema lays out the background of his environmental posthumanist approach, emphasizing the work of Rosi Braidotti in particular, and provides a short but detailed history of SF narratives that engage heavily with the idea of environment. He then traces the development of environmentally-oriented strains of posthumanism in contrast to strains that are focused specifically on technological innovation. This sketch also distinguishes both forms of posthumanism from transhumanism, a movement identified by posthumanist thinkers like Rosi Braidotti and Cary Wolfe as distinguished by its disinterest in revising the role of “the human” in philosophical, social, and governmental landscapes in favor of maximizing human agency. Idema notes an increasing visibility, in contemporary scientific thought, of approaches that de-center genetics in favor of interactions between organisms and the environment. These approaches are frequently linked to environmental posthumanism throughout the text; particularly the focus is on empirical science's overlap with philosophy and science and technology studies. The introduction closes with a consideration of the roots of resistance to the idea of environmentally-driven human transformation in anthropocentric religious, civic, and scientific traditions.

The first chapter is titled simply “Introduction,” resonating with the central focus of the chapter, which is a refinement of concepts surrounding just who counts as a responsible actor in mutually transformative ecological relationships. Idema takes the scientific work of Susan Oyama and pairs it with Kim Stanley Robinson's *Mars* trilogy, weaving them together around the idea of terraformation. In Idema's reading, the trajectory set by Oyama's thought is important for the notion of “intra-actions,” a way of understanding the mutually-constitutive aspects of the relationship between organisms and their environment. Oyama and several scholars following her lead contribute evidence of the responsiveness of the genetic code to its surroundings, de-centering theories that position genetic transformation as the cause of environmental change. Idema identifies this dynamic in Robinson's *Mars* trilogy as “the tension between anthropocentric and ecocentric perspectives” which “is . . . played out in the contrast between human focalization and (quasi-)scientific narration” (63). For

the *Mars* trilogy, this means that the central scientists' attempts to terraform Mars become impossible to disentangle from the process by which Mars "areoforms" the humans introduced to it. The striking novum, in Idema's understanding, is the humans' nearly total mastery of physics, biological manipulation, and both genetic and mechanical engineering. Even with this mastery, the humans find it impossible to control the evolution of the Martian environment without being changed by it, both socio-politically and biologically. Idema argues that this entanglement of politics and biology is how Oyama's oeuvre and Robinson's trilogy work together to push science and science fiction into the realm of environmental posthumanism. For Idema, science and politics become necessarily interconnected as a result, in opposition to what he terms the modern idea of science as an apolitical realm of objective observation.

Chapter two is less cohesive and more focused on using literature to explicate environmental posthumanism. Casting Bear's *Darwin's Radio* as a work of "informed speculation" allows Idema's reading of the novel to be a stage for a broad claim about SF in general: that it is the imaginary creative space in which informed authors actually contribute to both literature and science by pushing the boundaries of science more broadly than is allowable in the laboratory. Science Fiction, when written by a scientifically well-informed author, acts as a laboratory for thought experiments that help both SF and science improve. *Darwin's Radio* is particularly suited to Idema's purpose because it illustrates different approaches to science's relationship with institutions. The chapter contains a detour through the fruitful but meandering pathways of Deleuze & Guattari's *A Thousand Plateaus*. While this allows Idema to provide a thorough primer on the concept of "nomad science," which is relevant to his point in the chapter, the explication is too long at six and a half pages, moving too far afield of the discussion of *Darwin's Radio*.

Chapter three's primary claim is that Jeff VanderMeer's *Southern Reach* trilogy dramatizes the dissolution of the apparatus of androcentric epistemology and communication that structures humanity in the 21<sup>st</sup> century through the physical and mental transformation of the central characters. Idema links this narrative pattern with what he identifies as the trilogy's postmodernist pastiche of genres. This literary-critical observation works alongside a series of contemporary scientific approaches that emphasize the capacity for the environment to function as an actant that displaces the human, and human knowledge constructs like literary genres, from

the center of epistemological relevance. Stuart Kaufman's theory of evolution and Rosi Braidotti's ethics of sustainability are particularly important here. Kaufman's theory mirrors Idema's reading of the activity of the environment in the trilogy, and Braidotti's ethics offer a lens through which to read one central character's willing engagement, even fascination with, forces and processes outside the individual that seemingly dissolve and transform the very concept of individuality.

In chapter four, Idema's central literary argument is that Octavia Butler's *Lilith's Brood* "is an exploration of interspecies relationality and subjectivity that fundamentally questions anthropocentrism" (139). This interpretation rests on the argument that the trade of genetic material for survival between the Oankali—extraterrestrials with inborn genetic engineering abilities—and Earth's few surviving humans is not coercive in a colonialist or capitalist sense because the Oankali are also profoundly changed by the exchange and do not have full control over the process of blending their genome with that of the humans. As a result, at the end of the trilogy, there has been a merger between humanity and the Oankali that allows both to coexist where before both would have died out. Idema does not manage to completely refute the understanding of the Oankali as coercive because he does not directly approach the Oankali's control over which humans are allowed to be involved in the process of deciding or the coercive nature of the offer to exchange or die out. Idema's argument that comparing the trade to biotechnological capitalist exploitation ignores textual details is more convincing given his elaboration of the unpredictable results of the species merger and how the human insistence on confrontation and the value of both purity and separatism is mirrored between resistant human characters and readers that emphasize the coercive aspects of the bonding. Calling the reader to face the ways in which their thinking is limited in exactly the same way as characters' is a convincing rhetorical move. Idema manages to explain the discomfort elicited by, and depicted in, the *Lilith's Brood* trilogy in a way that leaves the discomfort intact but makes its profound interpretive weight clear. His use of Braidotti's posthuman ethics alongside Donna Haraway's work on companion species renders his identification of the uncomfortable and profound interconnection forged between species as the primary novum of the series convincing.

Overall, *Stages* is a very useful work for scholars interested in both science studies and science fiction. This work's occasional lack of clear transitions between ideas and vocabulary of different disciplines should be forgiven given the complexity of the

task Idema has attempted in this slim volume. Working through those challenges will be rewarding.