new codes (Melucci, 1989) in raising a more inclusive political and cultural participation space for the dominated and the dominating.

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Nature and Human Nature — Two Perspectives

The Philosophical Foundations of Ecological Civilization: A Manifesto for the Future

Arran Gare, Abingdon, Oxon/New York, Routledge, 2017

Autonomous Nature: Problems of Prediction and Control From Ancient Times to the Scientific Revolution

Carolyn Merchant, New York, Routledge, 2016

doi: 10.1017/aee.2018.6

Reviewed by Annette Gough, School of Education, RMIT University, Melbourne, Victoria, Australia

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Human relationships with nature are increasingly under scrutiny, so it is not surprising that they are the focus of two recent books in environmental philosophy. Both books are concerned with the environmental destructiveness of the techno-scientific culture of the

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West, and both call for the creation of an ecological civilisation as a world order based on a new relationship between humans and nature. Swinburne University philosopher Arran Gare has written *A Manifesto for the Future* (2017) for an ecological civilisation, which builds on his previous writings about the ecological crisis and (post)modern civilisation (see, e.g., Gare, 1995 or 2010). Carolyn Merchant (2016) returns to partnership ethics, an ethic that 'recognizes both nature and human communities as creative, changing, and interacting entities' (2016, p. 162), which she has previously articulated (Merchant, 1992, 1996, 2003) but is now informed by more recent writings about natures-cultures, the nonhuman world, and posthuman nature.

I first encountered Merchant's books more than two decades ago when I came across her groundbreaking book, *The Death of Nature: Women, Ecology and the Scientific Revolution* (1980). Here she emphasised the importance of gender in the historiography of modern science and addressed 'the sexist assumptions that informed sixteenth- and seventeenth-century conceptions of the universe and human physiology' (Park, 2006, p. 492). In this book, Merchant stressed the importance of gender in early modern writing on nature, a focus she continues in later works, including the one under review here.

Arran Gare has written extensively around the history of science and environmental philosophy (among other topics, the listing of which occupies one and a half pages of the book's bibliography) since the early 1990s, including his earlier book, *Postmodernism and the Environmental Crisis* (1995).

While Gare and Merchant are writing in similar spaces, I am intrigued by the paucity of reference to each other's work (despite both having relevant writings that go back over 20 years) and the few overlaps in their sources. Both authors go back to Aristotle, Augustine, and Aquinas; both mention Bacon, Newton, and Leibniz, but Spinoza is a passing reference for Gare while more central to Merchant's argument, and it is the reverse with Hegel and Schelling.

Gare makes no reference to Merchant's works, but Merchant (2003, pp. 201–203) references Gare (1995) and his calling for 'a new "postmodern grand narrative" that reconceptualises humanity's place in nature through a new politics, economics, science, and ethics' (p. 201). This new grand narrative is not simple but a multitude of 'polyphonic' stories that have 'a multiplicity of perspectives imbedded in the new stories through which people define themselves, their place, and their active roles' (p. 202), including taking into account the environmental crisis. As Gare (1995, p. 143) writes, 'Conceiving of narratives in this way ... would avoid the tendency of history to focus on the rise of Western civilization and to deny a story to societies subjugated by it'. Thus, rather than a linear narrative, or what Sandra Harding (1986, p. 193) calls a search for 'one true story', a synthesis or web of narratives may emerge where 'people will be able to redefine themselves such that justice within [their own bioregional environments] recognizes and serves all individuals, organisms, and ecosystems, and their potentialities and contributions to life, culture, and the sustainability of the world' (Merchant, 2003, p. 203). Indeed, interpreted in this way, Merchant's discussion of Gare's (1995) argument would seem to be consistent with Karen Barad's (2007) assertion that what is 'new' about new materialism is that 'matter and meaning are not separate entities' (p. 3). However, relating new materialism to Gare's more recent book is not as clear, although he is arguing that a dialogic grand narrative is required, allowing for the diverse voices of participants situated in diverse and complexly related communities and organisations, and economic, social and cultural fields with diverse histories, to question and participate in revising, reformulating, and developing the narratives they are living out, from the local to the global level, preserving the autonomy of their communities, institutions and fields as the condition for such participation (2017, p. 209).

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Across six chapters, as well as the Introduction and Conclusion, Arran Gare's (2017) book presents a deeply philosophical discussion of how civilisation has arrived at its current predicament and what reforms are needed to transform our culture to one that could provide the foundations for a global ecological civilisation. Chapter 1 discusses the crisis of philosophy and the humanities, and argues that philosophy is required to overcome the isolation and marginalisation of major work underway in the humanities (e.g., theoretical ecology, eco-semiotics, human ecology, eco-Marxism, ecological economics, and political ecology) and to integrate it with the humanities 'so it can effectively challenge current orthodoxies and their proponents and constitute a new grand narrative of emancipation', and 'shows that philosophy is required to transform culture and produce new subjectivities' (p. 31). Two main threads of this chapter are a defence of philosophy (having been described as 'a harmless, decorative activity' by Alasdair MacIntyre, 1987; as cited in Gare, 2017, p. 16) and a discussion of 'the rise of neoliberalism and the consequent paralysing of efforts to grapple with the ecological crisis manifest in the deeply rooted nihilism of the civilization of modernity' (p. 20).

Drawing on philosophers such as Bolzano, Quine, Schelling, Kant and Hegel, Chapter 2 ranges from analytic philosophy to speculative naturalism. Chapter 3 discusses dialectics from Marx to post-Marxism, including Sartre and Bourdieu, and Chapter 4 looks at the dialectics of speculative naturalism. Chapter 5 discusses reviving the radical enlightenment through speculative naturalism, including the triumph of technoscience over the humanities and its consequences. Chapter 6 and the Conclusion present the basic ideas required to create an ecological civilisation, the quest for which 'can give new meaning to and revive the quest for Life, Liberty and the Pursuit of Happiness' (p. 213). Here Gare concludes his argument:

> *It is life which gives meaning to liberty and happiness. Adopting the perspective of speculative naturalism, 'life' should now be extended to the life of the 'ecological' communities, both human and non-human, within which people are participating, which they are internally related to as well as being the conditions for their existence … (p. 217)*
>
> *Reformulating culture through speculative naturalism will create new subjectivities, subjectivities committed to addressing and overcoming the threats to democracy, civilization, humanity and terrestrial life from ecological destruction, and in doing so, creating a new civilization: an ecological civilization. (pp. 218–219)*

In his review of Gare's (2017) book, Murray Code (2017) notes that Gare 'is inspired by a vision of the future wellbeing … of the whole of the natural world', which will require 'transformations in predominant human attitudes towards nature', but he 'is well aware that the extremely vague idea of Nature cannot precisely be defined' (p. 300). In trying to understand modern ecological thought, Gare draws on a range of male Western (and European, except Quine who was American) philosophers from the 18th, 19th and 20th centuries. He does not draw heavily on historians of science, yet these may have helped with his vagueness around the idea of Nature, a topic that is central to Merchant's works.

It is hard to find a female being credited with any contributions to environmental philosophy in Gare's book, yet such writings are not difficult to find. Karen Warren's (2015) extensive entry in the online *Stanford Encyclopedia of Philosophy* describes 'Feminist Environmental Philosophy' as 'an umbrella term for a variety of different, sometimes incompatible, philosophical perspectives on interconnections among women of diverse races/ethnicities, socioeconomic statuses, and geographic locations, on the

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one hand, and nonhuman animals and nature, on the other'. Such perspectives would seem to be very compatible with the ecological civilisation to which Gare is aspiring, and indeed, the silence around these perspectives in the closing chapters of his book indicate a significant gap in its philosophical foundations for an ecological civilisation.

Carolyn Merchant's most recent book (2016) has a similar focus as her first book, *The Death of Nature: Women, Ecology and the Scientific Revolution* (1980), in that both focus on the history of the idea of nature in the Western world from ancient times to the (so-named) Scientific Revolution of the 17th century. However, in the new book she rereads familiar authors and events to shed new light on current problems, and takes the discussion of nature as an active, sometimes disruptive and unruly entity into the 21st century. She traces the problems of prediction and control of autonomous nature from ancient times — when nature was seen as unpredictable, unruly, and recalcitrant — through to the post Scientific Revolution scientists who sought ways of predicting and controlling the world around them, to the 21st century. Here she sees humanity as being 'in the throes of a paradigm shift, one that is triggered by two factors: the rise of the new sciences of chaos and complexity and by climate change as the most widespread catastrophe for the human future' (p. 1). She acknowledges that a major shift to the use of fossil fuels in the late 18th century initiated an era that is now frequently referred to as the Anthropocene, in which 'The complexities and consequences of changes in interlinked climate systems, ecosystems, and human systems are extremely difficult to predict [and] the comforts of mechanistic science have been superseded by the uncertainties of chaos and complexity theories' (p. 155).

Following from an Introduction, 'Can Nature Be Controlled?', three chapters discuss 'autonomous nature' as 'Greco-Roman concepts of nature', 'Christianity and nature', and 'Renaissance ideas of nature' as personified. This third chapter is particularly interesting, because Merchant examines the economic, technological, and intellectual changes that took place from the Middle Ages to the Renaissance and discusses how these changes interacted with natural disasters and with the feminisation and unpredictability of nature. It was against this background that the 17th-century concepts of experimentation and 'laws' of nature as a means of understanding and controlling active nature developed. Merchant explores 'the meanings associated with the Roman word for nature — *natura* — and the evolution and meanings of the terms *natura naturans* (nature creating, evolving, and changing) and *natura naturata* (nature as experienced in the everyday world)' (p. 8), which developed as an intellectual framework for depicting nature in the Christian era, and argues that 'The personification of *Natura* would set the tone for Renaissance depictions of nature and for ways in which *Natura naturans* and *Natura naturata* would frame the tensions between nature creating and nature as created world' (p. 69). She examines Renaissance ideas of nature as *Natura* in art and architecture, and in politics, noting that 'it was through the voluntary action of Nature that Renaissance thought accounted for unexplained, seemingly irrational events in the created world' (p. 73).

In Part 2 of the book, Merchant discusses 'Controlling Nature' over three chapters, covering vexing nature ('Francis Bacon and the origins of experimentation'), natural law ('Spinoza on *Natura naturans* and *Natura naturata*'), and laws of nature ('Leibniz and Newton'). Chapter 4 explains that by the end of the 17th century, experimental knowledge and mathematics had become the pillars of an emerging mechanistic worldview that together 'would provide both power and knowledge leading to the possibility of prediction and control over a nature that could seemingly be willful, recalcitrant, and unpredictable' (p. 97). Chapter 6 discusses how, by the late 19th century, the mechanistic view of nature led to scientific and technological advances that gave rise to optimism over the control of nature. However, as Merchant notes, in the early 20th century,

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Newtonian mechanics was challenged by Einstein's theory of relativity and Heisenberg's principle of uncertainty, and later by chaos and complexity theories that challenged the predictability of the level of everyday life.

This leads Merchant to her Epilogue on 'Rambunctious Nature in the Twenty-First Century', and the return of autonomous nature:

> *Here natura naturans (nature's creative force) and natura naturata (the created world) interact in complex, dynamic processes, many of which are beginning to have potentially irreversible effects on life on earth … The way in which nature as an autonomous system behaves depends on how humans behave in relationship to it. (pp. 149–150)*

Merchant then argues that in order to live within this new chaos and complexity paradigm, a new partnership ethics is needed: 'Understanding nature as a complex system that includes humanity within it allows for the possibility that both the earth as we know it today and humanity can survive and thrive together in the coming decades' (p. 153). She discusses new concepts of nature, including Bruno Latour's (1993) natures–cultures, Kate Soper (1995) on nature and the nonhuman, Katherine Hayles (1999) on nature and the posthuman, and Worsham and Olson (2008) on the technological boundaries between humans and nature in a posthuman age. She sees each of these concepts as contributing to her partnership ethics — each has positive aspects, but each is also lacking in some aspect. From this discussion, she concludes that 'Nature becomes postnature in ways that so thoroughly blur any human/nature differences as to make a single interactive, mutually influential, and mutually interdependent post-human-nature … a new relationship between humanity and nature based on the idea of autonomous nature' (p. 161).

Merchant concludes the book with a discussion of partnership ethics:

> *By merging anthropocentric with ecocentric ethics — the ethic that includes all of nature within it — we can develop an integrated, interactive ethic based on partnership between the human and the nonhuman worlds … A partnership ethic holds that the greatest good for the human and nonhuman communities is in their mutual living interdependence. (p. 162)*

Her ethic contains five precepts for a human community in a sustainable partnership with a nonhuman community — which is in a particular place, a place in which connections to the larger world are recognised through economic and ecological exchanges:

- Equity between the human and nonhuman communities;
- Moral consideration for both humans and other species;
- Respect for both cultural diversity and biodiversity;
- Inclusion of women, minorities, and nonhuman nature in the code of ethical accountability;
- An ecologically sound management that is consistent with the continued health of both the human and the nonhuman communities.

Twenty years ago (Gough, 1997), I wrote of the relevance of Merchant's partnership ethic for future developments of environmental education using a poststructuralist pedagogy. I argued that both critical pedagogy and constructivism are rooted in Cartesian dualisms that link them to a mechanistic scientific worldview (Merchant, 1980), whereas a poststructuralist pedagogy offers ideas about new approaches that take into account the disorderly ways in which meanings are written, read, and rewritten. A poststructuralist pedagogy encourages understanding the multiple positionings of race, class, gender, ethnicity, and nonhuman communities, as well as posthuman, and is consistent with understanding the total environment in a less distorted way.

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Merchant argues that 'a partnership ethic brings humans and nonhuman nature into a dynamically balanced more nearly equal relationship with each other' (p. 162). This is an approach that would be more respectful and consistent with the general capabilities dimensions of the Australian Curriculum that include Critical and Creative Thinking, Personal and Social Capability, Ethical Understanding, and Intercultural Understanding, and units in Geography such as 'Geographies of Interconnections' and 'Environmental Change and Management'. We should be educating students about 'New policies in which humanity and earthly nature are in partnership … toward making the earth of the future a sustainable place to live' (p. 164).

Arran Gare's book encourages readers to contemplate new ways of thinking about how humans can take on their moral and ethical responsibilities for the natural world, and Carolyn Merchant's book can help inform education programs that are concerned with understanding changing human relationships with nature and how humanity can live with an autonomous earthly nature in a partnership ethic. I found Merchant's book easier to digest and apply in educational settings.

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Reviewer Biography

Annette Gough is Emeritus Professor of Science and Environmental Education in the School of Education at RMIT University and Life Fellow of the Australian Association for Environmental Education. Her research interests span environmental, sustainability and science education, research methodologies, posthuman and gender studies, and she has completed research projects for national and state governments, as well as working with UNESCO, UNEP and UNESCO-UNEVOC on several research and development projects.

Place, Being, Resonance: A Critical Ecohermeneutic Approach to Education

Michael W. Derby, New York, Peter Lang, 2015
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Reviewed by David Wright, Western Sydney University, NSW, Australia

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The premises of this study are profound: they call up absorbed conversation, but more than anything, they demand experience. These are known best ontologically, in relationship to the world of nature and the social networks that we inhabit in our relationship with nature. In this respect, criticality is a perspective informed by disempowerment; hermeneutics is informed by deeply sensed participation in the construction of knowledge. The translation between these forms of encounter and their reportage, like that between ontology and epistemology, is necessarily interpretative. Here, language becomes a fluid method for the nomination and communication of understanding. And many have sought to communicate in this way. Numerous theses have been written to capture phenomenal experience through summative explanation. This is another. It is a powerful thesis informed by a deep reading of major authors in the field. It is an interdisciplinary work that draws on poets, eco-psychologists, eco-feminists, scholars of Indigenous experience, environmental educators and major theorists in critical inquiry, hermeneutics, and phenomenology. The goal is a curriculum that includes 'engendering a deep and participatory understanding of place; recognising and revitalising oral traditions; focusing on interpretive and experiential inquiry with an emphasis upon story telling; and connecting to ecojustice frameworks to analyse the linguistic dimension of the ecological crisis ...' (p. 57).

Considerable attention is devoted in this volume to addressing what a critical ecohermeneutic approach to education is. This is done through reference to key writers. Each are used, variously, to legitimise and entrench the approach. Very early, the author describes his tremulous approach to his subject: 'Here, walking a boreal forest path with

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