

Dwelling in the Anthropocene: Reimagining University Learning Environments in Response to Social and Ecological Change

David Rousell

School of Education, Southern Cross University, Lismore, New South Wales, Australia

Abstract

Over the last three decades, scientists have uncovered the extent of human impacts on the earth's operating systems with increasing clarity and precision. These findings have prompted scientific claims that we have transitioned out of the Holocene and into the Anthropocene epoch in the earth's geological history (Crutzen & Stoermer, 2000). At the same time, the traditional humanist underpinnings of the university have been eroded by the ongoing digitisation, massification, and decentralisation of higher education. This article argues that higher education has a crucial role to play in responding to the Anthropocene thesis, which at the same time provides a powerful impetus for reimagining the university through posthumanist concepts. In developing this analysis, conceptual distinctions are drawn between visions of hope and disaster, the local and the regional, dwelling and construction, and emplacement and displacement in the context of university learning environments. The learning environment is specifically addressed throughout as a fluid and transitional space for experimenting with concepts and practices that operate outside of humanist constructs and disciplinary boundaries. As the very idea of 'the university campus' threatens to become an anachronism, the author concludes with a speculative proposition for the reimagining of the university in the Anthropocene era.

A man buys a pair of jeans from a multinational retailer in a local shopping centre. Later he finds out they were produced in a substandard factory in Bangladesh that recently collapsed and killed over a thousand workers (see [Edwards, 2013](#)).

A family saves up for a trip to the Great Barrier Reef to see one of the great wonders of the natural world. They arrive only to discover that much of the

Address for correspondence: David Rousell, School of Education, Southern Cross University, Lismore NSW 2480, Australia. Email: David.Rousell@scu.edu.au

coral has been decimated due to coal and natural gas mining within the reef itself (see Safina & Brown, 2013).

These stories are haunting, perhaps more so in their familiarity than their shock value. They illustrate social and ecological crises that are not impending but immanent and irrefutable, woven into the very fabric of everyday life. These vignettes of everyday unsustainability reveal a red line that has already been crossed, rather than a looming disaster that can still be averted. They also demonstrate how the habitual centrality of the humanist subject can often occlude the underlying material conditions of such disasters: a family is disappointed by bleached coral; a consumer feels guilty that his purchase was unethical.

This article is set against such a background of accelerating change, in which we find ourselves already in the midst of everyday social and ecological catastrophes, existential risks and uncertain futures (Wals & Corcoran, 2012). For several decades, scientists have been uncovering global crises with increasing clarity and precision, yet more recently these issues have also become salient, indeed saturated, within the collective psyche of the public domain (Stokols, Misra, Runnerstrom, & Hipp, 2009). Due to the global permeation of human impacts on the earth's ecosystems, many scientists now claim that the planet has transitioned out of the Holocene and into the next geologic epoch in the earth's history, that of the Anthropocene (Crutzen & Stoermer, 2000; Steffen, Broadgate, Deutsch, Gaffney, & Ludwig, 2015; Steffen, Crutzen, & McNeill, 2007; Zalasiewicz, Williams, Steffen, & Crutzen, 2010).¹

This article explores the implications of the Anthropocene thesis for rethinking university learning environments in response to recent movements towards digitisation, decentralisation, and massification in higher education. Scientific perspectives on the Anthropocene are first addressed to provide the material context for the discussion. This is followed by a series of cultural readings of the Anthropocene as an age typified by rapidly changing material conditions that call for new knowledge practices and ontological orientations (Braidotti, 2013; Morton, 2013). Critical perspectives on the neo-liberal university are then explored, pivoting on the argument that the humanist underpinnings of the contemporary university no longer correspond with its digitised and decentralised operations. Ironically, it is the very decentralisation of university structures and hierarchies that may open up radical alternatives associated with distributed learning networks and non-local ecologies of practice (see Stengers, 2005). Such distributed learning environments are thus proposed as theatres of operation in which posthumanist visions of the university might be prototyped, or at least placed into experimental play. As such, this article retools philosophical concepts associated with dwelling, the regional, and emplacement through a posthumanist lens in an attempt to render them adequate to the challenges presented by the Anthropocene thesis. While all three of these concepts are historically situated in phenomenology, anthropology, geography, and place-based education, they are extended here to think outside humanist bifurcations between subject/object, interior/exterior, natural/cultural, human/animal, social/ecological, and digital/physical learning environments. This posthumanist analysis is then used to generate a speculative proposition for the reimagining of the university as a creative institution that is capable of adapting to rapidly changing environmental conditions.

The Onset of the Anthropocene

The underlying premise of the Anthropocene is that humanity has become a geological force that is already affecting every ecosystem on the planet. A variety of scientific methods have been employed to measure the magnitude of planetary changes

associated with the Anthropocene, including sea level rises, global temperature increases, levels of atmospheric carbon dioxide, rates of anthropogenic denudation, and human population growth (Zalasiewicz, Williams, Smith, Barry, & Stone, 2008). These factors, combined with human-derived habitat fragmentation, invasive species, and predation, have skyrocketed the biological extinction rate from 100 to 1,000 times pre-industrial levels (Zalasiewicz et al., 2010). At this current rate, humans will have precipitated the sixth great extinction event in the earth's history by the end of this century, and established the conditions for a Third World War, based on the scarcity of living space and dwindling resources (Slaughter, 2012, p. 120).

Evidence of the Anthropocene can be found physically in the earth's geologic strata, as sedimentary layers that have accumulated steadily since the rise of industrialisation in the 17th century (Zalasiewicz et al., 2010). These include heavily modified strata, such as those found underneath mass agricultural areas and water catchments. Measurable amounts of artificial radionuclides can also be found in strata virtually anywhere on the earth, dating back to the first atomic detonations in 1945 (Zalasiewicz et al., 2010). Certini and Scalenghe (2011, p. 1269) argue that the pedosphere, or outermost layer of the earth, is 'the best indicator of the rise to dominance of human impacts on the total environment'. The terrestrial landscape associated with the pedosphere has also been extended to include human-derived strata such as buildings, roads, cities, landfills, and other infrastructure that has been terra-formed onto the earth's surface (Denizen, 2013).

Many geologists are now tracing the first stage of the Anthropocene back to the industrial revolution in the 19th century, and delineating a second stage with the first atomic explosions in the 1940s (Steffen et al., 2015; Steffen et al., 2007). This second stage is also defined by 'The Great Acceleration' of human enterprise, which saw the population double in half a century and levels of human interference with the earth's ecological systems go vertical across the board (Steffen et al., 2015; Steffen et al., 2007). A third stage is said to be unfolding at the present moment, as propelled by 'the recognition that human activities are indeed affecting the structure and functioning of the Earth System as a whole (as opposed to local- and regional-scale issues)', a recognition which is now 'filtering through to decision-making at many levels' (Steffen et al., 2007, p. 618).

Ruddiman (2003, p. 261), by contrast, cites much earlier evidence of anthropogenic soils in the pedosphere and CO₂ emissions in the atmosphere. He argues for a longer timescale to account for the onset of the Anthropocene, as initiated by rice agriculture 5,000 years ago, and human deforestation of landmasses up to 8,000 years ago. This perspective places a historical and material emphasis on the very rise of human civilisation as the underlying condition for the Anthropocene. However, Steffen et al. (2015) use data from their latest Earth System indicators to argue that such early claims for the Anthropocene focus exclusively on human impacts on the terrestrial biosphere, rather than 'changes in the structure or functioning of the Earth System as a whole' (p. 93). Their latest findings indicate that 'only beyond the mid-20th century is there clear evidence for fundamental shifts in the state and functioning of the Earth System that are beyond the range of variability of the Holocene and driven by human activities'.

The data sets produced by Steffen et al. (2015) are unique in that they factor in socioeconomic and Earth system trends between 1750 and 2010. Their findings have also been consistent with other studies covering partial durations and indicator groupings over the same time period. Unique to these recent findings is the deconstruction of socioeconomic trends between countries or groupings of countries, rather than treating humanity's impact on the Earth as an aggregated whole. This innovation in methodology reflects the broader turn towards research practices that combine the natural and

social sciences to adequately respond to the Anthropocene thesis. Such an approach enables Steffen et al. (2015) to simultaneously track changes in social and environmental conditions as they impact on specific regions of the Earth system. In doing so, they find that ‘the historic inequalities embedded in the origin and trajectory of the Great Acceleration continue to plague negotiations to deal with its consequences’ (p. 91). This finding highlights the crucial significance of cultural analyses that address the underlying political and social conditions that are implicit in the origin and acceleration of the current ecological catastrophe.

Cultural Responses to the Anthropocene

The Anthropocene era is still in the process of being formally added to the geological time-scale, though the term is commonly used by geologists and other earth scientists to denote the present period in the earth’s history. The Anthropocene has also entered the popular lexicon as a vivid descriptor of the contemporary world (Zalasiewicz et al., 2010). Ackerman (2014, p. 10), for example, eloquently ushers the Anthropocene into the popular domain as ‘the human age’, a new world of technological innovation shaped by humans as ‘supreme beings ... present everywhere and in everything’ (p. 12). While ‘the urgency of reining in climate change’ is acknowledged, Ackerman remains ‘enormously hopeful’ because ‘our new age, for all its sins, is laced with invention’ (p. 13). As such, the sixth great extinction event is glossed over in favour of a case study about an orangutan using applications on an iPad (p. 7).

While the example of Ackerman’s popular science writing borders on hyperbole, it is indicative of a secular humanist position that is backed into an ontological corner: either elevate the status of the human to that of a supreme being, or face the terrifying reality that humans and all other living creatures are at the mercy of phenomena that far exceed the human. Morton (2013) takes up this latter posthumanist position when he claims that the Anthropocene is not an age shaped by humans, but an age shaped by hyperobjects that are ‘massively distributed in time and space relative to humans’ (p. 1). Black holes, radioactive waste, the gross machinery of capitalism and global warming are examples of hyperobjects that exist in scales of space and time that are too large and diffuse for humans to register. Climate change and nuclear radiation cannot be perceived directly as such, and their effects far exceed the scale of human time. Yet, despite our inability to perceive them directly, hyperobjects have come to define the material conditions of everyday life in the Anthropocene. We find ourselves eating, sleeping and working within such massively distributed phenomena as climate change, radiation, and mobile telecommunication networks. Maybe humans will not be the ‘supreme beings’ who will determine the next age of the Earth. Rather, as Morton suggests, it may be hyperobjects that will be ‘responsible for the next moment of human history and thinking’ (p. 201).

While the initial recognition of the Anthropocene thesis is rooted in the earth sciences, it becomes apparent that some of the biggest questions it raises fall under the domains of philosophy, education, the arts, and the humanities. What does it mean to be human in a world that can no longer support our numbers? What elements of human civilisation can and should be sustained into this uncertain future? What would a society be like which rejected beliefs in human exceptionalism and dominance over other species? Arts and humanities scholars have been active in taking up such challenging questions. Ellsworth and Kruse (2012) recently edited a collection of over 40 essays addressing artistic and cultural responses to the Anthropocene in their book *Making the Geologic Now: Responses to Material Conditions of Everyday Life*. In the year and a half it took them to compile the book, the authors witnessed ‘Anthropocene’ go from an

obscure scientific term to a word that yielded over half a million references on Google (Ellsworth & Kruse, 2012). Ellsworth and Kruse (2012) describe how many artists and philosophers are now taking up the Anthropocene as the ‘explanation, motivation and inspiration for cultural and aesthetic responses to the present moment’ (p. 6). Citing Denizen, they explain how the rapid acceleration of human enterprise has precipitated a situation in which ‘speeds of change in material realities of life on the planet are outpacing our ways of knowing’ (p. 8). The sheer numbers, diversity and hybridity of bodies in the world, be they human or non-human, are increasing exponentially by the second. Humans are now able to bring species back from extinction using DNA samples (Biello, 2013), clone existing species, and fuse machines with living tissue (Morton, 2010). Such unprecedented environmental and technological change means that ‘new sorts of thinking and making are now possible, and called for, in response to new material situations of daily life’ (Ellsworth & Kruse, 2012, p. 9).

There is a sense of urgency in these calls for new thinking and knowledge practices that are responsive to the extreme rates of material change associated with the Anthropocene. Ironically, at the very moment that we apprehend the onset of a new geological era through advanced satellite imaging, geochemical testing and computer simulations, we also realise that we have lost any clear sense of what it means to be human. As Morton (2013) further argues, we have not only lost a coherent sense of the human, but we have also lost any sense of our ‘world’ at the same time. Without any clear point of reference between natural and cultural phenomena, between foreground and background, we lose the concept of a ‘world’ that has been determined exclusively through the lens of human events and human history. For Morton, ‘the end of the world is correlated with the Anthropocene, its global warming and subsequent drastic climate change, whose precise scope remains uncertain while its reality remains beyond question’ (p. 7). This suggests that both humanist and naturalistic frameworks fail to provide any compass for navigating the entangled phenomena we co-inhabit with legions of other beings. The age of hyperobjects requires, as Morton suggests, ‘an upgrade of our ontological tools’ (p. 92). Posthumanist theory and practice aims to offer such upgrades which can ‘help us re-think the basic unit of reference for the human in the bio-genetic age known as “anthropocene” ... along with the basic tenets of our interaction with both human and non-human agents on a planetary scale’ (Braidotti, 2013, p. 5).

This article takes up the call to develop new kinds of thinking and knowledge practices in universities that are responsive to the shifting social and ecological conditions of the Anthropocene. Leinfelder (2013) optimistically suggests that the concept of the Anthropocene provides ‘a solid base for envisioning a sustainable human presence on Earth in which humans would no longer be “invaders” but rather participants in shaping the natural environment’ (p. 9). This capacity for humans to co-compose the terrestrial architectures of a new Earth will necessarily draw as much from the arts, humanities and education as from the fields of science and technology. Leinfelder further speculates that: ‘in the future, technology and culture could be integrated into nature- and thus the “unnatural” environment that surrounds us today would be transformed into a human-designed neo-natural environment that includes culture and technology as an integral part of an interconnected system’ (p. 9). Others are not so sure that the Anthropocene will last long enough for us to witness such technological wonders. For Wallin (2015) and Morton (2013), responding to the Anthropocene means facing the reality of extinction, or more specifically, the death of the world *as it has existed for humans*. Some of the uncertain implications of such futures are explored in this article, specifically with regard to the changing role of university campuses and their learning environments.

The University in the Anthropocene

Universities can be readily identified as hotspots for cultural change in response to the rapidly shifting environmental conditions of the Anthropocene. University campuses are places in which technological, creative, scientific, and philosophical advancements are often made on a daily basis and in close proximity with one another. Many of these advancements have the potential to address the social and ecological issues of our times. Yet these rich opportunities for transdisciplinary teaching, learning and research are often left unacknowledged. Slaughter (2012, p. 123) gives a summary of the current situation:

As the world trembles on the edge of chaos, most universities remain caught up in business-as-usual thinking, their priorities very much bound up with inward-looking purposes and goals such as funding, standards and position in the international pecking order. Paradoxically, many have within them some of the most talented and capable people in the world, many of whom work at the leading edge of research and innovation in a vast number of fields. Universities need to be taking the lead in gearing up for the transitions ahead. They need to take up their potentially catalytic role in creating and sustaining social foresight.

Research and teaching in universities that effectively works between the arts, humanities and sciences is deemed necessary to address the fundamental entanglement of nature and culture endemic to everyday life in the Anthropocene (Braidotti, 2013). Trischler (2013) argues that addressing the Anthropocene thesis demands a transdisciplinary approach, because the concept ‘permeates disciplinary boundaries and challenges established demarcation lines within academia’ (p. 6). The structural properties and affordances of proximal disciplines equip university campuses and their learning environments with unique potentials for such experimental research and knowledge practices that operate between the arts, humanities and the sciences.

Despite the potential for transformative research and teaching practice that is responsive to the conditions of the Anthropocene, very little has so far been published in this regard. The ways that the cultural landscapes of universities can and will change in response to the Anthropocene thesis remain to be seen, along with the associated changes in curriculum and pedagogy within current university structures (Slaughter, 2012). For Leinfelder (2013, p. 15), the core structural challenge facing academia in relation to the Anthropocene is that of a fundamental mismatch between isolated disciplines and an interconnected world. Rather than waiting for top-down structural changes to happen over time, he argues that teachers and researchers should enact pioneering activities that open up interdisciplinary spaces in university settings. To this end, Leinfelder (p. 23) describes several key methods for conducting such transformative projects in higher education: (1) learning by *participation*, in which responses to the Anthropocene are integrated into participatory research projects and learning activities; (2) using *experiential scenarios* to bring the ecological conditions associated with the Anthropocene alive for people, such as museum exhibitions and fictional narratives; (3) creating new forms of *reflection and speculation* that address the fundamental entanglement of nature and culture; and (4) developing new modes and formats for *communication*, including innovative methods of ‘translating’ research findings and theory for the broader community (p. 24). Such approaches could enable the Anthropocene concept to motivate innovation in teaching and research, and at the same time open the university campus up to the wider community as a public learning environment, perhaps coming to resemble a ‘museum of ideas’ or a ‘botanic garden of knowledge practices’.

Disaster and Hope

The emerging field of ‘critical university studies’ provides a variety of socially critical perspectives on the state of the university in contemporary times (Whelan, Walker, & Moore, 2013). These competing perspectives are useful in establishing an orientation by which cultural responses to the Anthropocene can become perceptible within the higher education landscape. Where for Leinfelder (2013) the primary aporia in higher education is between isolated disciplines and an interconnected world, for Whelan et al. (2013) the untenable discrepancy is between the humanist ideals which universities ‘espouse as their stated aims’, and the ways that universities ‘actually work (or do not work)’ (p. 4). The authors attribute a number of key factors to this current tension within higher education, including: (1) the deprofessionalisation and casualisation of academic staff; (2) the digitisation of curriculum, pedagogy and research practices; (3) the commercialisation of research grants and funding; (4) the instrumentalisation of universities to serve the labour market; and (5) massification and the rise of virtual learning environments (VLEs) and Massive Open Online Courses (MOOCs) (pp. 4–6).

Whelan et al. (2013, p. 1) interpret these indicators as warning signs of ‘the “living death” of higher education’ and what they provocatively term the ‘zombification’ of the contemporary university. This perspective can be summarised as a position of deep unease and dissent grounded in the gaping divide between the actual operations of universities and the ‘undead’ humanist concepts that continue to haunt them. The shade of the ‘elitist, inviolate tower’ of academia persists, for example, despite the massification and intellectual dilution of higher education to serve the demands of both the market and the state (p. 4). Rather than being exposed to an education based on liberal humanist values like democracy and social justice, students are shuttled through a vocational or managerial track with instrumental outcomes tied to every unit of work. Essentially, what universities purport they will provide for students and staff is often predicated on humanist concepts and values that have ceased to be consistent with current practices.²

On the other side of the spectrum, Peters and Besley (2013) observe the current climate of change in higher education as grounds for the rise of the creative university. For these authors, the digitisation and decentralisation of the university holds significant opportunities for more democratic and imaginative forms of educational practice:

‘creative universities’ might embrace a myriad of different descriptions based on user-centered, open-innovation ecosystems that engage in cocreation, coproduction, codesign and coevaluation emphasizing theories of collaboration, collective intelligence, commons-based peer production and mass participation in conceptions of open development. (p. x, emphasis in original)

Peters and Besley (2013, p. x–xi) specifically cite the work of Barnett (2013) in reimagining a creative and ecological model for higher education based on four different layers of creativity: (1) intellectual creativity associated with creative research and knowledge production; (2) pedagogical creativity associated with innovation in curriculum and pedagogy; (3) learning creativity that is developed among students through their learning processes and experiences; and (4) reflexive creativity through which the university comes to understand itself and its possibilities. These layers of creative production can be described as a process of resingularisation, by which the university becomes an institutional entity that is able to transform and reimagine itself (Guattari, 1995, p. 132).

These visions of radically open universities (Peters & Besley, 2013), along with creative and ecological universities (Barnett, 2011, 2013), resonate strongly with Braidotti’s (2013) vision of the contemporary university as an ‘exploded and expanded institution that will affirm a constructive post-humanity’ (p. 184). Braidotti describes

this as a transition from the self-contained university to the *multi-versity*, which is deeply integrated into the social and ecological fabric of its surrounding civic environment. The multi-versity would operate as a kind of social, cognitive, technological, and ecological hub for posthuman knowledge practices within the civic community, rather than being enshrined in the ivory towers of the academic disciplines (Braidotti, 2013, p. 180). Braidotti further argues that only a transdisciplinary ‘mix of innovation and tradition can sustain the continuing relevance of the institution of the university in the contemporary world’ (p. 181). In this way, the emerging model of the multi-versity is one of an academic community without fixed identities or unifying principles, but one which is orientated towards the emerging publics, technologies, and landscapes of an uncertain future. This vision would see a new outpouring of intellectual creativity associated, in Braidotti’s terms, with the posthuman humanities, including the neural humanities, the digital humanities, the environmental or sustainable humanities, the biogenetic humanities, and any number of new configurations between the arts, humanities, and sciences (p. 184).

Despite the apparent disparity between battling the living dead of academia and the revisioning of a creative and ecological multi-versity, the Anthropocene concept provides fruitful grounds for working between these posthumanist positions of benighted disaster and visionary hope. Indeed, the undead model of isolated disciplines in their inviolate towers is long due for revision in response to the onset of the Anthropocene. It is also apparent that the contested territory of the university itself will continue to play a central role in whatever the future holds for the human species and the others with whom we share the Earth. While the university may currently exist in a liminal and uncertain state without a coherent role in society, there is still hope that strong new movements may emerge that are resistant to the corrosive attacks of corporatisation and neo-liberal policy. The creative university (Peters & Besley, 2013), the ecological university (Barnett, 2013), and the multi-versity (Braidotti, 2013) are three such posthumanist trajectories for universities hoping to navigate through the uncertain times of the Anthropocene era.

The Posthumanist Learning Environment

So, how might we begin to conceptualise and prototype these ecologically diverse, massively distributed learning environments that would populate the future universities of the Anthropocene? In higher education, the academic learning environment has traditionally referred to the physical spaces in which teaching, learning and research take place within a university campus. These environments often include places such as studios, laboratories, lecture theatres, classrooms, libraries and common outdoor spaces. More recently, academic learning environments have blended into digital spaces that can be accessed regardless of geographical location (Bayne, 2008), as well as external public spaces such as galleries, museums, botanic gardens and national parks (Ellsworth, 2005; McKenzie, 2008). Yet the academic learning environment can be understood as much more than the physical, geographical or even digital location in which learning takes place; it also refers more broadly to ‘the set of conditions that enable and constrain learning’ (Brown, 2009, p. 16). As Brown (2009) further explains, learning environments are open, mobile systems with porous borders that are responsive to both internal and external dynamics, allowing them to evolve morphogenetically over time. This suggests that the possibilities for learning are enabled and constrained by the affordances that inhere to the specific ontological conditions of a particular learning environment.

The Anthropocene thesis, along with resonant calls from ecological philosophy (Guattari, 1995) and posthumanism (Bogost, 2012; Braidotti, 2013), demands moving beyond humanist conceptions of the learning environment as socially constructed. The work of Gibson (1979) and Bateson (1972) initially pointed the way towards an ecology of sensation and perception, in which the affordances of an environment ‘exist as inherent potentials of the objects within the world, independent of any use made of them by individuals or other sentient creatures’ (Blewitt, 2006, p. 21). From this perspective, the learning environment is not constructed *by* humans and *for* humans to apprehend, but is rather constituted *through* the complex relations between entities in a collective field of engagement, some of whom may happen to be human. As Ingold (1992, p. 44) further explains, a human’s direct perception of the learning environment is a particular mode of *engaging* with that environment, rather than a mode of *constructing* it. Education then becomes a particular mode of perceptual attunement and topological experimentation with the affordances and constraints of the learning environment, what Ingold (2000) calls an ‘education of attention’ and Deleuze (1994) an ‘education of the senses’.

The academic learning environment could then be approached as the sensorium and the imaginarium of the academic disciplines as they are sustained within an ecology of practice (Pink, 2009; Simons & Masschelein, 2008; Stengers, 2005). In the emerging interdisciplinary scholarship associated with the Anthropocene, however, the learning environment is rarely the exclusive province of a single academic discipline. Most learning environments in a university will host a number of different disciplines simultaneously or consecutively, such that the learning environment is defined by the pragmatics of the learning situation taking place at a particular time rather than a fixed disciplinary territorialisation (Brew, 2008). In addition, disparate disciplines are found to be congealing rather seamlessly into various ‘studies’, such as ‘science and technology studies’ and ‘environmental studies’ (Braidotti, 2013). Here we find scientific experiments operating in an art gallery, and biological artworks being developed in scientific laboratories. This intensive de- and re-territorialisation of both the learning environment and disciplinary practice means that academic fields are in a constant and fluid state of mobility, not only epistemologically but also ontogenetically.

This observation of disciplinary territory as mobile and contingent contrasts with Becher and Trowlers’ (2001) use of the anthropological terms ‘tribes and territories’ to describe academic communities, their learning environments, and structural knowledge bases. Latour (2013, p. 23), for example, describes how the academic disciplines no longer retain any clear borders in the Anthropocene, and yet still manage to sustain their *differences* from each other. These differences include the kinds of threshold concepts, practices, knowledge, and materials that are valued within the discipline (Carmichael, 2012). The academic domains, in this sense, have become untethered from their moorings, and yet continue to carry their conceptual cargo as they float freely in the uncertain waters of the Anthropocene. The disciplines may be seeking to find new shelters and alliances with which to weather the storms of social and ecological upheaval and reformation. Indeed, Latour (2013, p. 23) describes the need to ‘sketch out temporary dwelling places’ for the disciplines of the academy as we move deeper into the uncharted territories of the Anthropocene.

Dwelling and Construction

So, what might it mean to dwell in these nomadic learning environments of the Anthropocene, in these transitional spaces between disaster and hope? Ingold’s (2011) anthropological account of the ‘dwelling perspective’ offers a way of understanding the learning environment in terms of ‘the material flows and currents of sensory awareness within

which both ideas and things reciprocally take shape' (p. 10). This notion of dwelling involves much more than the occupation of prefabricated environments, regardless of whether those environments are considered 'natural', 'cultural', or 'technological' constructions. Rather, dwelling involves 'the immersion of beings in the currents of the lifeworld without which such activities of designing, building and occupation could not take place at all' (Ingold, 2011, p. 10). From the dwelling perspective, all construction of buildings, machines, environments, knowledge, and even identities is circumscribed within dwelling, rather than dwelling being circumscribed within construction. This reversal of Cartesian logic means that 'the forms people build, whether in their imagination or on the ground, arise within the current of involved activity, in the specific relational contexts of their practical engagement with their surroundings' (Ingold, 2000, p. 186). As Heidegger (1971) deftly summarises, '*only if we are capable of dwelling, only then can we build*' (p. 361, italics in original). In other words, only through dwelling in the learning environment do organisms come to learn, and to encounter and construct knowledge through practice, by experimenting with the affordances and constraints of that very environment.

In leaving behind the humanist model of the unitary learning subject, dwelling becomes a collective practice associated with both ecological and aesthetic awareness of the learning environment's potentials for producing onto-epistemological differences. This is to approach the learning environment as an ecology of practice that includes but always exceeds the human. Yet a posthumanist account of dwelling would require still further modifications of Heidegger's (1971) phenomenological analysis, which remains limited by the centrality of human experience. This would entail positioning the learner as but one object among many, an entity dwelling within the phase spaces of even larger entities. Such extensions of the phenomenological project to object relations have been undertaken by thinkers associated with object-orientated ontology, including Harman (2005), Morton (2010, 2013), and Bogost (2012). The applications and implications of such an 'alien phenomenology' or ethology of education have only been tentatively explored, and the 'field is so new that its potential and its problems are not entirely clear' (Snaza & Weaver, 2015, p. 6).

Adopting a dwelling perspective holds significant implications for higher education in the 21st century, in which the boundaries between biological, cultural and material development are beginning to dissolve. 'Insides and outsides define and "specify" each other as *developmental interactants*, codetermining outcomes' (Oyama, 2009, p. 149, emphasis in original). Development, in this sense, is not limited to what is physically built, culturally constituted, or genetically determined. Instead, development can refer to what is materially, biologically, ecologically, and culturally *grown* through the evolution of concepts and also of practices within the learning environment as a distributed network of human and non-human agencies. The learning environment becomes a milieu that exists both inside and outside of the body as a relational field of emergence, a space of co-composition that is always already inhabited by multiple others (Manning & Massumi, 2014). In foregrounding dwelling as ontologically prior to construction, we are urged to discover coeval modes of becoming and knowing within the cracks of the eroding architectures and hierarchical structures of higher education. Yet this brings up the necessary question of boundary conditions. Where does the learning environment begin and end?

The Regional and the Local

While the account of dwelling above operates across a macroscopic view of 'the university' in a global context, higher education actually takes place at a regional level of

specificity within the mesocosm of a university campus, its surrounds, and its extended phenotype of ecological networks (social, digital, political, and so on). In a vernacular sense, notions of the local tend to perpetuate a concern for individuals who happen to occupy a specific location, along with the resources that support those individuals. The local is problematic for posthumanism because it presupposes ecological sovereignty or human entitlement to ownership over such valuable entities as waterways, mountain ranges, and arable land. The regional, on the other hand, is a concept that lends itself to a much wider swathe of the social and ecological landscape, which is inclusive of untold species and modes of existence that are co-extensive with the human. The primacy of the regional over the local has also been central to many indigenous philosophies and practices that are currently informing critical approaches to education (Dei, 2011) and sustainability (Blewitt, 2006).

Ingold (2000, p. 226) draws on the philosophies and practices of First Peoples around the world in articulating this distinction: where the local implies the viewpoint and ownership of fixed locations *within* the landscape, the regional involves the mapping of collective movement and experience *through* the landscape. In other words, where the local is fixed and culturally closed, the regional is nomadic and culturally open. In the field of contemporary art, the regional is similarly associated with site-specific practices within communities and environments that are predicated on the fluidity and movement of bodies, identities and meanings rather than fixed positions (Kwon, 2002, p. 165). In environmental education, the regional is folded into a critical pedagogy of place, in which the cultural and ecological history of the surrounding environment critically informs the development of a curriculum and pedagogy for that region (Gruenewald, 2003). A regional approach to the university would then be predicated on the primacy of movement, in which the campus becomes a fluid space for travelling through diverse learning environments and communities of practice. This could also be extended through a bio-geo-cultural perspective, in which the learning environment is recognised as a common world shared with legions of other living and non-living entities.

This would inevitably have a significant impact on the concepts and theories that are deployed in teaching and research in universities. Drawing on the work of Connell (2007), approaching higher education from a regional perspective means working with the site-specific resources that can be found in a learning environment and its proximal ecologies of practice. Connell argues that the academy has too often been dominated by ‘the viewpoints, perspectives and problems of metropolitan society, while presenting itself as universal knowledge’ (p. viii). In contrast to what she calls ‘northern theory’, Connell advocates the development of ‘southern theory’, which brings the specificity of the regional, peripheral, and marginal into the centre of teaching, learning, and research in universities. This means that concepts are grounded in specific teaching and research settings, rather than being generalised from raw data into ‘abstract universals’. Connell thus argues against pure general theory in favour of ‘dirty theory’ that is ‘mixed up with specific situations’ (p. 207). The goal of dirty theory is ‘not to classify from outside, but to illuminate a situation in its concreteness’, in order to multiply, rather than reduce ‘the theoretical ideas that we have to work with’ (p. 207). In other words, southern theory is about embracing and extending the complex realities of regional cultures and ecologies of practice by attending to the nonlocal specificity of place. This is to suggest that universities would develop their own conceptual and theoretical frameworks and signatures that are grounded in the social and ecological phenomena that occur in the regions they inhabit.

In different ways, these varied perspectives conceptualise the regional as a fluid and heterogeneous field of relations that expresses the vernacular specificity of place as the foundation of curriculum, pedagogy, and research practice in universities. The

regional thus contrasts with a homogenising conception of ‘the local’, and also with universalising abstractions associated with ‘the global’ (Connell, 2007). The concept of the regional university campus could, in this sense, be specially suited to exploring the implications of the Anthropocene in higher education. It might help generate the boundary conditions through which the natural and the cultural can be sensibly and perceptually entangled within a constellation of diverse environments, communities, concepts and practices.

Emplacement and Displacement

Along with the notions of dwelling and the regional, recent work in anthropology and geography has taken up the notion of ‘emplacement’ to incorporate the concepts of embodiment, perception, and place within a single category of analysis (Howes, 2005; Pink, 2009). The concept of emplacement accounts for the sensuous, creaturely, and affective interrelationships between people, places, things, and ideas as they exist in a lifeworld (Howes, 2005). Emplacement, like dwelling, is always geographical, biological and cultural at the same time, and describes the ‘bundle of sensory and social values contained in the feeling of “home”’ (Howes, 2005, p. 7). Yet, where dwelling can be a generalised mode of existing environmentally in the world with others, emplacement is a more rarefied concept predicated on particular feelings of belonging, habit, and communication associated with the sensory profiles of regional cultures and ecologies. While everyone has a body that ‘dwells’ in an environment of some kind, not everyone feels like they have a home.

The other side of emplacement, then, would be *displacement*: the feeling that one has no home and is experientially disconnected from one’s social and ecological environment. Indeed, a sensitive and robust process of decolonisation may be necessary for a renewed sense of emplacement to even begin to occur in a given learning environment. The learning environment would need to start operating as a kind of geo-bio-cultural contact zone, in which the sensory encounters between diverse modes of existence are honoured and openly explored outside the limitations of human exceptionalism. Such a resingularisation of the learning environment would allow for beings to grow and learn by dwelling ‘in difference’ with multiple others, be they animal, vegetable or mineral. Emplacements could then be approached as a series of gradual movement towards the posthumanist university, perhaps propagating through what Stengers (2005, p. 183) calls ‘social technologies of belonging’. Rather than evoking nostalgia for a time and place in which humans felt more at home in the world, emplacement in the learning environment would proceed through speculative, queer and propositional movements and activations. Again, this would necessarily involve extending positions for emplacement, dwelling and belonging to the legions of non-humans who also populate our universities. The deployment of such ecological practices and technologies in the learning environment could equip universities to better respond to the rapid social and environmental changes associated with the Anthropocene era.

Conclusion: Speculative Propositions for a Posthumanist University

This article has tentatively reworked notions of dwelling, the regional, and emplacement through a posthumanist lens in an attempt to render these concepts adequate to the ontological conditions of the Anthropocene. This has involved a speculative analytic process that extends phenomenological claims to agency, habitation, and interiority to non-human entities, and acknowledges the gravity of massively distributed hyperobjects (such as climate change) in reshaping the practices and orientations of university lifeworlds. So, how might these retooled concepts of dwelling, the regional, and

emplacement contribute to the reimagining of the university in response to social and environmental change?

While university learning environments can and should offer places of dwelling and emplacement for humans, they also provide dwelling places for numerous other beings who are essential to the sustainability of the university campus. Acknowledging these others as agentic in the acts of teaching, learning and research is an important first step towards the reimagining of the university and its learning environments. Dwelling, in this sense, would entail practices of cohabitation and codesign that are both inclusive and productive of differences between disciplines, between species, and between cultures. A learning environment orientated towards dwelling as cohabitation might start to resemble a botanic garden, biosphere, or other terraformation of the landscape as an experimental architecture that generates new social and ecological assemblages. Communication technology and media would also be critical for such socio-ecological assemblages, particularly in relation to the mobilisation of learning environments that are massively distributed across a non-local region. While a regional perspective untethers dwelling from the constraints of location, it still retains the specificity of place as a multiplicity. Distance and proximity could start to fold into one another as affordances rather than constraints on the learning environment, allowing ‘internals’ and ‘externals’ to work together regardless of discipline and location. In allowing for such expanded practices of dwelling, the university campus could increasingly become a regional hub for social, ecological, and technological movements and activations that are responsive to the Anthropocene’s challenges.

The role of emplacement in this speculative proposition is strategically orientated towards such experimental modes and technicities that can enable the university to effectively reimagine itself as a ‘home’. The university has the potential to become a vibrant testing ground for new kinds of knowledge practices that are responsive to the changing material conditions of the Anthropocene. Emplacements in this sense might include social, material and conceptual infrastructure that is conducive to a posthumanist vision of the learning environment as ‘a home in common’. This might involve what Bogost (2012) refers to as ‘carpentry’, or the crafting of objects, architectures, machines and equipment that actually do philosophical and pedagogical work. Carpentry is associated with transversal practices of art, design, engineering, information technology and scholarship that operate outside the limitations of textual discourse. We can start to imagine the emergence of context-aware learning environments as massively distributed networks that are responsive to changes in climate, student engagement, and socio-ecological milieu. The learning environment might come to consist of a series of emplaced bodies, objects, modules, networks, and design elements that students and teachers collectively assemble into working prototypes and architectures to test ideas. Virtual emplacements in the learning environment, in this sense, might come to feel as ‘real’ as physical emplacements. The textual basis of higher education might soon be eclipsed by affective flows of images, objects, movements, gestures, sensations, and other visceral experiences of learning. These posthumanist visions, however, highlight the need to think about emplacements as a series of steps that proceed gradually along the nexus of social and technological innovation.

Snaza and Weaver (2015, p. 3) argue that our continuing ‘saturation in humanism’ is prohibiting our ability to establish the outlines of a posthumanist pedagogy and curriculum. It may be virtually impossible to design and implement an authentically posthumanist curriculum for institutions so fundamentally steeped in neo-liberal humanist ideals. Instead, scholars and educators are urged to experiment with the possibilities of posthumanist ideas in the learning environment, without rushing to plan or commit to reductive frameworks or functional applications. It is thus the possibility of *what*

posthumanism might come to do that is at stake in higher education. Under these terms, a posthumanist learning environment would operate through a curriculum of unknowns, a 'dark curriculum' that unfolds by means of speculative propositions and ontological experimentation. This would be a curriculum orientated towards the realism of ecological catastrophe, and the 'risk that there will be no more human history unless humanity undertakes a radical reconsideration of itself' (Guattari, 2008, p. 45). Indeed, the same can be said of the contemporary university as it oscillates between visions of hope and impending disaster.

Endnotes

- ¹ On the geologic time-scale we are currently in the Quaternary era of the Cenezoic period in the earth's history. Within the Quaternary era, the Pleistocene epoch began approximately 2.8 million years ago, and encompassed the emergence of the earliest known humans and erratic climate shifts associated with the ice ages. The Pleistocene epoch lasted until the end of the ice ages approximately 110,000 years ago, which marked the transition into the Holocene epoch. Many geologists mark the initial transition into the Anthropocene with the industrial revolution in the 19th century, with a second stage advancing with the first atomic explosions in the 1940s (Steffen et al., 2007).
- ² For a concise genealogy of humanism in education, see Snaza, 2015.

Keywords: higher education, learning environments, Anthropocene, dwelling, emplacement, posthumanism, speculative philosophy, environmental education, critical university studies

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Author Biography

David Rousell is a doctoral candidate in the School of Education at Southern Cross University. His PhD collectively reimagines university learning environments in response to the changing social and ecological conditions of the Anthropocene. David is also

Research Fellow on the 3-year Climate Change and Me project with children and young people as co-researchers. His research has been published in journals including *Multi-disciplinary Research in the Arts* and the *International Journal of Education Through Art*, and he has also exhibited widely as an artist in Australia and overseas. David's research interests focus on the emerging intersections between ecology, aesthetics, and pedagogy, as infected by various strands of speculative philosophy.