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Prologue: Positioning Educational Research in the Age of the Anthropocene: A ‘wicked’ epoch

Jennifer Charteris, Adele Nye, Sofia Mavropoulou, Vicente Reyes

The undeniable impact of humankind on society and environment or what scholars have identified as humankind’s continual “transforming the planet” (Schwagerl, 2014, p. 9) has been described as the age of the Anthropocene. Global change is a phenomenon that marks a profound change in the relationship between humans and the rest of nature (Steffen, Crutzen & McNeill, 2007). The Anthropocene is not only a contested epoch in human existence but, as an era evoking wicked problems, it raises issues for researchers and the porous boundaries of the paradigmatic approaches used. There have been calls for scholarship that draw attention to the unique shift in our epoch; “experimental monographs that redefine the boundaries of disciplinary fields, rhetorical invasions, the interface of conceptual and scientific languages, and geomorphic and geopolitical interventions” (Cohen & Colebrook, 2016, p. i). This edited volume provides an assemblage of texts to fill this gap, providing a comprehensive coverage of educational paradigms and critiques of perspectives toward the wicked problems of the Anthropocene.

We argue in this volume that never before has it been more important for Education research to engage with the politics of knowledge production- to recognise and address the ecological, economic, and political dynamics of the Anthropocene. Although the general field of education and the specific area of educational research are themes that have been covered quite comprehensively in extant literature, the topic of educational paradigms that are linked to education in general and educational research in particular has not adequately been addressed. The particularities of our epoch require that we think generatively about the limitations of research practices and their paradigms in order for us to possibilise research that responds to the tensions of the Anthropocene. This edited volume engages with the broad topic of educational paradigms in seeking a direction forward for educational research that grapples with both the richness and complexities of our current milieu. We firstly frame the epoch of the Anthropocene and raise questions about the adequacy of research approaches to address the immediacy and challenges of the era.

Anthropocene defined: Commodification of life processes

The Anthropocene epoch signifies a profoundly influential period where humans have dominated the earth's natural resources. The term Anthropocene, is derived from the Ancient Greek word *anthropos*, meaning 'human'. The Anthropocene is "a new phase in the history of both humankind and of the Earth, when natural forces and human forces became intertwined, so that the fate of one determines the fate of the other" (Zalasiewicz, Williams, Steffen, & Crutzen, 2010, p. 2231). In the last century, one of the most discernible impacts of human ascendancy on the planet is the increase of greenhouse gases (Wang, Yung, Lacis, Mo & Hansen, 1976). This has evoked eschatological speculations with concerns raised as a species humans are on a trajectory to oblivion. The impact of humankind to the planet is signaled by the contentious issue of global climate change with the "main source of global climate change" linked with "human-induced changes in atmospheric composition" (Karl & Trenberth, 2003). The Anthropocene era, particularly humankind's continual domination of nature, has led scholars to predict "more intense, more frequent and longer lasting heat waves in the 21st century"(Meehl & Tebaldi, 2004, p. 994). This long-standing process has created a wide array of complexities and problems for human society and the environment. There is a confluence of threatening influences that include pollution, depletion of natural resources and social inequities (Stengers, 2015). We have seen a world of unfair distribution of resources with social injustice epitomised by the imbalances occurring through rich and poor nations undertaking negotiations on global climate change (Palsson et al., 2013).

Humankind will remain a major geological force for many millennia, maybe millions of years, to come. To develop a universally accepted strategy to ensure the sustainability of Earth's life support system against human-induced stresses is one of the greatest research and policy challenges ever to confront humanity. (Steffen, Crutzen & McNeill, 2007)

Evidently, we are facing a new conception of ourselves through the recognition that we are both an "agent of destruction and [an] endangered species" (Colebrook, 2016, p. 89). We may well encounter the collapse of societies as we know them and a degeneration into a barbarous competition for resources (Stengers, 2015, p. 15).

The epoch has changed: fifty years ago, when the grand perspectives on technico-scientific innovation were synonymous with progress... It is not in the least bit ensured that the sciences, such as we know them at least, are

equipped to respond to the threats of the future. Rather, with what is called the “knowledge economy,” it is relatively assured that the answers that the scientists will not fail to propose will not allow us to avoid barbarism.

(Stengers, 2015, p. 29)

If Stengers’ dystopian vision is correct and we are facing species extinction with the threat to our own survival through environmental disaster, what are the implications for the nature of research and how research is undertaken?

Wicked Problems: Cataclysms

Transformations associated with the Anthropocene epoch bring about challenges in the area of educational research. It raises the question how educational research scholars and practitioners can reflect on efforts to understand phenomena in the age of the Anthropocene? The threats to humanity associated with the 21st century epoch offers a new transformative experience that potentially disrupts the landscape of research - and educational research in particular.

The earlier work of Rittel and Webber (1973) and the more recent scholarly work of Head (2008), theorise wicked problems as “a combination of complexity, uncertainty and divergence of values” (p. 101). The age of the Anthropocene is an age rife with wicked problems. Moreover, solutions to wicked problems generate new problems and, as such, there is a sense of hopelessness surrounding them. “Wicked problems are so commonplace that the chaos and futility that usually attend them are accepted as inevitable. Failing to recognize the ‘wicked dynamics’ in problems, we persist in applying inappropriate methods and tools to them” (Conklin, 2005, p.3). It may be that we are attached to the promise of comforts, - stability of income, social mobility, job security, however, these are the fantasies of late capitalism and constructions of cruel optimism (Berlant, 2011). It is our aim to foreground influential forms of research that address ‘wicked issues’?

Educational Research and the Anthropocene: An awakening

In the rich historical landscape of research there have been several transformational changes that have responded the various epochs. The documented start of which can be identified as originating with the Copernican revolution of the 16th century (Crowe, 2001). Newtonian physics followed thereafter influencing the conduct of research (Ichikawa & Steup, 2014). The emergence of the Heisenberg uncertainty disrupted linear and precise

ways of understanding nature through research (Croca, 2003).

Almost at the same time that Descartes and his ideas of knowledge derived through empirical verification became fashionable (McLaughlin, 2000) Kant and his "Critique of Pure Reason" served as the counterbalance to the Cartesian mindset. In the language of research, quantitative paradigms can be traced to Cartesian thought whilst qualitative perspectives find their lineage to Kantian philosophy (Snipe & Spencer, 2003) Much later, the introduction of the concept of triangulation by Campbell and Fiske (Campbell & Fiske, 1959) heralded the entry of a third paradigm in the language of research: Multiple research methods (originally coined) or more formally known currently as mixed methods. For most of the modern era, these three paradigms were the conduits of knowledge formation towards achieving the public and professional value of research as a source of "understanding, reflection and action" (Willinsky, 2001, p5).

Such cataclysmic and mighty expectations for the globe and for humankind, cast a vast shadow over our own small academic positions, as we consider what this could mean for educational practice and educational theory in the context of our work and our university. How might we think and operate in a world of new, un-trodden and misshapen spheres? Might we deploy the narrative of the trickster (Thornton & Malhi, 2016) with its capacity for transformational thinking and capacity? More pointedly, how might academics, and their students, navigate this newness of epistemological and ontological debates and ultimately find sites that resonate and that they can latch on to in the tumultuous landscape? Barnett (2012) has argued that the unknown future of higher education places us in a 'logical conundrum'. "'Learning' implies a change in understanding and a change in one's relationship to the world; but an unknown world places questions against appropriate changes in understanding and in one's relationship to a world that is unknown" (p. 65).

The concept of the Anthropocene offers more than a merely apocalyptic view of humanity's future, it offers a way forward for new research that entangles the social and material worlds we live in. Colebrook (2016) highlights that the Anthropocene offers an "impossibility of promise" in that we can decentre our own anthropocentrism (p. 105).

It is possible to say that the Anthropocene offers, by way of geological inscription a time frame beyond our present, and that in doing so it opens human thinking to a future not given. What appears as a dire prediction—the

earth as a living system marked with destruction—is also, by virtue of opening a time of thought beyond ourselves, the recuperation of the infinite.

(Colebrook, 2016, p. 105)

Considerations of the Anthropocene offer opportunities for rethinking the binary split between nature and society through which we can challenge damaging practices that “normalise the politics of colonization and globalisation” (Ritchie, 2015). Moore (2015) writes:

For some of the authors the Anthropocene is a complex time period of accelerated, human-dominated global change, for others it is a specific narrative framing of contemporary life and futures. For some it is a lens through which to view multispecies worlds in formation, for others it is a spatial and material manifestation of specific economic, scientific, and political practices. (p .1)

It is at this juncture referred to by Moore that we locate this volume. It is pertinent to the nature of research projects and the associated methodological projects we evoke in this Education knowledge production. Education can play a crucial role in fostering social change, through the development of humans who show empathy, respect and sensitivity to their own and others’ needs (Ritchie, 2015). In this endeavor, we do not intend to undermine the importance of interdisciplinary research and practice. On the contrary, we aim to position a wide collection of research paradigms in the contested era of Anthropocene, so that it will become evident how different perspectives on the study of human-nature interactions in educational contexts can facilitate social transformation towards more equitable and resilient communities.

Our research paradigms have served us in this era of neoliberalism and advanced capitalism; yet it is time to adapt in order to construct new possible futures. If the epoch has changed... it is not a matter of an observation of impotence, but rather of a point of departure (Stengers, 2015, p. 30). In light of this point about visualizing ‘departures’, we offer the following provocation. If we accept the Anthropocene as a tipping point for humankind, then we must acknowledge the commodification of life processes. Wicked problems are engendered that have wreaked cataclysms upon humankind and nature. In this anthropocentric epoch, existing research paradigms may no longer be sufficient to frame research that addresses the pressing issues of our

epoch. Quantitative research and its silence in relation to unexplained variance, qualitative research and its insistence on trustworthiness and mixed methods research and the accompanying perception that with combined approaches, validity is enhanced- these research paradigms seem to be unable to properly address the wicked problems of the age of the Anthropocene.

A new direction for the advancement of research asks for a synergistic spirit and cross-disciplinary collaborations to address and respond to multi-faced research questions for generating a holistic understanding of human-landscape systems (Gibson & Venkateswar, 2015; Harden et al, 2014). The time has come for well-established research paradigms to be re-examined for their assumptions, foci and methods in an effort to map out an emerging realm of thought and action in educational research (Lather, 2006, St Pierre, 2013). Research can generate invaluable understandings and knowledges about the complex human-nature interactions in educational spaces; however, theorists and researchers in education are confronted with tensions surrounding the concept of the Anthropocene and its consequences for formal and informal learning environments. We propose that the discursive arena of the Anthropocene may serve as a welcomed conversational space in which researchers will re-examine their values and priorities as well as re-position themselves in this juncture. Despite our fears for an unknown future, the value of contemplating our role as education researchers may suggest purpose and hope for the formation of a new worldview in the age of the Anthropocene. As Bourke and Loveridge (2017) point out, researchers have the knowledge, skills and expertise to collaborate with groups in society over ‘wicked problems’ that require collective attention.

Highlighting that the anthropocene offers an “impossibility of promise” Colebrook (2016) argues that the opportunity to think beyond our own era opens us to both “a time of thought beyond ourselves” (p. 105) and multispecies urgency as we contemplate mass death and extinction. The wicked problems addressed in this volume include the posthuman “pain of disidentification from anthropos” (Braidotti, 2016, p. 16),

The 12 chapters provide a range of different approaches to researching wicked problems in Education in the Anthropocene. The book is divided into three interrelated sections Contestability, Context and Chronology. In the first section,

Contestability, the authors surface contestability pertaining to the nature of wicked problems and the capacity of educational research paradigms to address salvation narratives that have been associated with crises of the Anthropocene. Areas of conflict and consensus are outlined that have typified the evolution of educational paradigms. A range of provocations are produced as heuristics to aid us to think deeper about complex issues. In the second section, Context, consideration is given to how the situatedness of educational research can address particular wicked problems. A specific focus of this section (and of the entire book) is to provide a nuanced range of viewpoints that reveal both complexity and possibilities to draw from the epoch. The last section deals with the historical trends of theories that have an impact on educational paradigms. The permanence as well as the transitory nature of these theories are explored. We provide a short synopsis of the various chapters in the book.

Contestability

The contestation section commences with **Stephen Heimans'** chapter '*The World is Gone, I Must Carry You*' offers a treatise on doing post-critical educational research with the Anthropocene. Heimans rejects the bifurcation of 'human' from 'nature' that has separated out relations, enabled nature's exploitation and promoted the negligence of the Capitalocene (Haraway, 2015) (the human exploitation of the Earth's resources for profit). He provides a poetic philosophical venture into the idea of being entangled with the anthropocene and poses perplexing questions. What does the wicked problem of mass extinction mean for the world -humans and non-humans? How can we do more than understand nature-human predicaments -not just know about them or reveal something about their conditions- but to come to understand our mutual entanglements? If the Anthropocene is a human-less world, does it still exist? Heimans writes in a manner so that form follows function with an approach aimed to unsettle rather than explicate and as such lays the foundations for subsequent authors to trouble and explore the boundaries of existing paradigmatic research approaches.

Margaret Somerville and Sarah Powell, in their chapter entitled '*Researching with children of the Anthropocene: From old to new materialism*', argue how post-human approaches within Anthropocene scholarship, that are characterised by in-depth ontological and epistemological theorising, can assist us to think beyond the reactionary nature/culture binaries. Writing in the context of early childhood

education, they propose that full awareness of the consequences of human entanglement in the fate of the planet will only be felt by children born in the twenty first century into an entirely different world than the one we know and understand. They draw from posthuman philosopher of physics, Karen Barad's (2007) Theory of Agential Realism and its operational concept of 'intra-action' and central idea of entanglement to illustrate their paradigmatic argument with empirical research with young children in an early learning centre in relation to the simultaneous emergence of matter, bodies and language. 'To be entangled is not simply to be intertwined with another as in the joining of two separate entities, but to lack an independent self-contained existence' (Barad, 2007, x). Acknowledging that feminist poststructuralism as a research paradigm has long been interested in materiality, they argue that Barad's concepts of entanglement and intra-action offer a paradigmatic break between old and new materialism.

In exploring empirical instances of agential realism, they raise questions about the existence of data in posthuman research and the critique of the lack of a critical politics of the Anthropocene. They argue that such research is deeply challenging in how to account for the multiple simultaneous sounds, movements, and collective intra-actions, but that at the same time it is deeply ethical in its simultaneous attention to all of the matter of the world, including its children. The authors draw on a project that addresses the research question 'how is the world asking to be named and how are children naming their world?' Their chapter offers both theoretical and methodological insights to the reader interested in exploring the liminal spaces between the imagination and the materiality of the world.

Tiffany Jones in her chapter '*Queer Theory in Education Research*' makes a very important contribution to the volume in articulating an argument that Queer Theory should to be taken up as a mainstream theoretical lens in educational research. Queer Theorists have applied post-structuralism to identity and a host of other themes – most notably in the work of Lacan, Foucault, Derrida and Butler – revealing Queerness in things labelled 'normal', and normality in things labelled 'Queer'. Jones discusses Queer Theory definitions, associated methods, and key Queer research studies to illustrate its application to education. These include policy research, curriculum and textbook analysis, studies of classroom talk and student surveys. The chapter provides key questions that can be used to address wicked problems through

basic Queer reading strategies and linguistics (for policy, curriculum and classroom talk analysis); Approaches touched on also include Judith Butler's concept of performativity; and the less widely applied concepts of overplay, transference and erasure.

Jones uses Queer Theory to question grand narrative tropes ascribed into naming the Anthropocene age itself. She leverages key arguments that 'some humans are way more responsible than others' for the climate 'weirding' of the age. The naming of this geological era as the Anthropocene implies that both the problem and the solution to our ecological crisis lie with Homo sapiens. This naming adds further our human sense of exceptionalism from and mastery over the world (Bauman, 2015). Jones extends Queer Theory beyond a focus on human identity work, proposing that it can disrupt humans' in a way that only adds further to humans own sense of their exceptionalism from and mastery over the world (Bauman, 2015). She extends Queer Theory beyond a focus on human identity work, proposing that it can disrupt humans' sense of themselves and emphasise that we are not separate from the natural climates that we believe ourselves to be changing (Bauman, 2015). The chapter concludes by articulating the value of key critiques of Queer Theory and the way the theory questions the privileging of certain models of time and space, including the Anthropocene age itself.

In a chapter entitled 'Solving the *'Wicked Problems' of the Anthropocene: Karl Marx's Paradigm and Australian Educational Research*', **Kelvin McQueen** argues the need to recognise and value the tradition of Marxist educational scholarship. It is argued that the recovery of Marxism is particularly salient in an Anthropocene era dominated by advanced capitalism and the potentially terminal ecological crisis. McQueen leverages existing scholarship to argue how the application of Marx's methodological insights can illuminate key issues in human-environmental relations and furthermore that the use of these insights can enable us to engage critically and actively with current understandings of the Anthropocene. The chapter firstly leverages four particular assumptions of a Marxist paradigm in order to provide a four points framework for applying Marxism to educational research. The chapter seeks to provide the outlines of a paradigm for educational research that at least can grapple with the 'wicked problems' associated with the Anthropocene. In his stinging critique of state-directed and institutionalised

education, McQueen highlights how, as part of the totalising and oppressive operation of capitalism, Education systems provide few solutions to the ‘wicked problems’ of the Anthropocene ‘problem’. As a paradigmatic approach, Marxist insights can address the ‘wicked problem’ of the Anthropocene in three ways: illuminating the current crisis; interrogating the range of scholarly representations of it; and indicating a pathway toward a transcendence of the ‘problem’.

Context

The second section of the volume considers context. The context section commences with **Jo Denton’s** chapter ‘Mixing Methodologies: A Sliding Continuum or an Iterative Cycle’, that addresses a question whether mixed methods research can be used to tackle relevant and pressing issues that we currently experience in the Age of the Anthropocene. Denton offers an elegant argument for combining qualitative and quantitative methods as mixed methodological research framework that can be used to address the Anthropocene’s wicked problems. A historical analysis of the development of mixed methodologies is provided alongside an examination of the various ways and debates in which mixed methodologies can be seen from the perspectives of research paradigms and of methodological approaches. The chapter proposes an omniduction approach to researching wicked problems as a possible resolution to the disputes related to the polarization of approaches in mixed methodologies.

Jo Bird and **Fiona Scott** provide a timely critique of existing research approaches with pre-schoolers in their chapter entitled: ‘*Adults researching pre-schoolers in more-than-human contexts. Rethinking ethnographer roles in the age of the Anthropocene*’. Drawing on data from their two different ethnographic projects with preschool children, Bird and Scott argue that existing educational research paradigms can be insufficient for understanding ethnographer/child relationalities. Whilst engaging in ethnographic research with pre-school children researchers mutually affect, and are affected by, encounters with both the human and more-than-human (Rautio & Jokinen, 2015). Through their empirically grounded reflections in the social and material spaces of kindergartens and family homes, Bird and Scott surface critical questions about: inherent tensions between child-centered and posthuman paradigms; the (in)stability of researcher identities in the Anthropocene; and the unique research context(s) of early childhood play. The chapter provides clear arguments as to how theoretical positionings from post-structural and post-human

perspectives can assist with wicked problems and new norms for ‘identity work’ are proposed for researchers who work in the emergent post-human and Anthropocene traditions.

Nandakumar Mayakestan outlines the possibilities that Narrative Inquiry can provide as a methodological and theoretical lens to address wicked problems associated with educational leadership. In particular the chapter addresses contemporary debates in educational leadership research for the Anthropocene. Mayakestan alerts us to how narrative inquiry enables us to both critically examine and potentially contribute to knowledge and knowledge system and in doing so address the intractability of wicked problems. The use of organisational power in schools in Singapore is used as a case study. The study of ‘wicked problems’ in Singapore is also potentially exacerbated by factors such as the society’s strong disposition for a portent mix of oriental and neoliberal values, and incredible penchant for efficiency and effectiveness of a centralised system of education. Mayakestan’s chapter outlines pertaining to the challenges of the Anthropocene age through the “hegemonic lens of positivist paradigms.” Furthermore, Mayakestan argues that doing so could lead to a situation where “we could fail to notice the nature of situated issues such as conflicts, income inequality and power relations that is intrinsic is post-modern human society.” She provides a deep exploration of the lived experiences of educational leaders which can potentially shed light on wicked problems facing educators that are commonly associated with the age of Anthropocene.

In his chapter entitled ‘Investigating Human Consciousness through Florian Znaniecki’s Humanistic Sociology and Memoir Method’, **Vegneskumar Maniam** contributes to the field of humanistic sociology and its application towards contemporary education research. It outlines key elements associated with humanistic sociology as a research approach and its development. The chapter highlights how the memoir method as an effective approach to qualitative social scientific research. And how humanistic sociology can speak back to the complexity of wicked problems in the anthropocene epoch. The chapter uses case studies to illuminate multicultural policy in Australia, especially in the area of school language programs, learning and multicultural education programs in South Australia.

Chronology

The third and last section of the volume addresses the temporal history behind approaches to research that addresses wicked problems in the Anthropocene.

Marnee Shay commences the Chronology section with her chapter '*Nothing about us without us*': *valuing and recognizing Indigenous ways of knowing in Indigenous education research*'. Over the last two decades there has been increased recognition of the importance of indigenous research paradigms, particularly in education research literature. As Shay points out, the historical exclusion from accessing education and the subsequent abundance of research that objectified, racialised and problematised indigenous peoples is both a historical and ongoing 'wicked problem' for Indigenous researchers, internationally and in Australia. She argues that it is critical that Indigenous knowledges and voices are active contributors to knowledge production that is aimed at solving problems associated with our anthropocene epoch. As a culture that sustained itself for tens of thousands of years, she sees that it is evident that there is much to learn in the academy and beyond from Australian Indigenous perspectives and knowledge paradigms.

The development of theories such as Indigenous Standpoint Theory provides Indigenous scholars ways in which to leverage Indigeneity in conceptualising and addressing research problems. Indigenous theories surface epistemological perspectives that honour and recognise Indigenous worldviews. Shay's chapter provides a historical overview of how Indigenous research methodologies and epistemologies have emerged and developed in the academy. She argues that the practice of undertaking Indigenous focused education research without Indigenous people should have no place in the modern academy. Indigenous research paradigms need not be a contestation between Western and Indigenous knowledge systems. Rather, using Indigenous theoretical roots, which have been developed by Indigenous scholars, we should consider how Indigenous epistemologies and ontologies can be privileged in Western education institutions to provide new knowledges about old problems.

Florence Navidad describes wicked problems within the Philippine context and in particular the Philippines Higher Education Institution (HEI) sector in her chapter entitled '*Educators' Attitudes And Barriers Towards Educational Research: A Basis For Research Policies And Guidelines In A Philippine Context*'. She outlines issues and challenges that confront academics within the Philippines as a developing country. Alongside contemporary

studies on research attitudes of educators, Navidad leverages seminal studies (Hu and Bentler (1999) in relation to structure modelling as well as the highly-influential work of Fornell and Larcker (1981) in relation to structural equation models (SEMs) and measurement errors) to make her argument. She unpacks the issues faced by academics in generating research through the use of quantitative approaches, particularly a cross-sectional study employing structural equation models. She raises a salient question regarding whether quantitative educational research in this particular instance may not be enough to address wicked problems.

Lucinda McKnight 's chapter entitled '*Anthropocenic poetry: Arts-based research for a new era*' contributes to the emerging field of posthumanist arts based research. The chapter outlines key elements in the history of the genre and how it functions to critique humanist hegemonic research practices. The chapter provided a compelling argument for this emerging paradigmatic form of research. McKnight discusses the value of arts-based research in Education and sketches a general chronology of arts-based educational research and in doing so highlights how educational research may also be used to interrogate how human society and environment are constituted and understood in the Anthropocene.

McKnight gives consideration to how entities such as the human, or the planet, are conceptualised in arts-based research in the context of the Anthropocene. She evokes critiques that outline limitations of the humanism that has underpinned White, Western or Northern projects of formal education since the Enlightenment. She asks us to consider the following question: How can we put arts-based concepts to work to imagine an education that does something other than create better (whiter, more male, more able-bodied, more elite, more adult, more human) entities? The chapter forms a layered chronology, where McKnight as a poet and curriculum designer, provides examples of educational arts-based research to demonstrate what it can offer researchers in defining and exploring the problems of the Anthropocene. She draws from examples of her own research poetry that are both illustrative and potentially confronting.

In the final chapter entitled '*Is Complexity Thinking a Useful Frame for Change-Oriented Educational Research?*', **Jane Gilbert** discusses highly-relevant questions pertinent to the research impetus to address the wicked problems of the Anthropocene. She posits that if prediction, replication, probability, linear cause-and-

effect, control, “right answers” and rules are an illusion, a “god trick”, then how are we to “make sense” of complex systems? Can they be researched? What would be the purpose of this research? What would its starting point be? What would we actually do? How would we know when we had built new knowledge? How would the quality or robustness of this knowledge be assessed? Who by? What can we achieve by doing this? How, if at all, might it be useful to anyone? Gilbert’s chapter provides a roadmap as to how complexity thinking could afford ways to enrich a future-oriented educational research agenda. She examines the concept of “digital revolution” espoused by Kurzweil (2005) and Brynjolfsson and McAfee (2011), explores Sardar’s (2010) postnormal time, and thoroughly interrogates Snowden’s (2002, 2005) Cynefin framework. Gilbert maps how “mega-trends” in the world beyond education can disrupt many of education’s most fundamental assumptions, including reframing its very purpose.

Complexity theory, with its capacity to challenge currently prevailing research paradigms, can be a means to engage with the fundamental shifts associated with the Anthropocene and the proliferation of wicked problems that mark the epoch. Gilbert sets out strategies for complexity-informed critical “research” on educational systems, and look briefly at the implications of this approach for future thinking about educational research - and its wider purposes. She proposes that radical change is required if we are not to see increasingly fragile education systems that will slowly lose energy until they become obsolete.

The chapters that follow provide accounts and critiques of positivist, interpretative, critical, poststructural and posthumanist approaches to education research in the age of the Anthropocene. Wicked problems by their very nature are not easily resolvable, however critical engagement with the scope and purpose of various research paradigms help us to grapple with what it means to undertake educational research in an era where knowledge production is under contestation.

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