

## From Passengers to Crew: Introductory Reflections

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It is only very recently that we humans have come to recognize our place on this Earth. As Marshall McLuhan once put it: "On Spaceship Earth there are no passengers; everybody is a member of the crew" (McLuhan, 1974, p. 50). While we have never been simply passengers, our status as crew has mattered little for almost all of human history; to paraphrase Harari (2014) we have been decidedly "insignificant" crew members. This changed drastically with our capture of fossil fuels, or "ancient sunlight" as Hartmann (1999) calls it, to drive the machine of successive industrial revolutions (Marks, 2006). Thanks to these developments, the Earth has transitioned out of the Holocene and into what is now being termed the Anthropocene, an age in which our status as crew members is hugely significant. We have become "geological actors" (Chakrabarty, 2009) whose actions have shaped, and are reshaping, the systems that have kept Spaceship Earth on its course for some 10, 000 years. The consequences of this new era are both profoundly global and acutely local: with the pushing of our planetary boundaries, safe spaces for humans and other species are shrinking, giving way to less favourable and less stable planetary conditions for the lifeforms evolved in the previous Holocene era.

Our Earth has entered "uncharted territory" (World Meteorological Organization, 2017). The great acceleration of Earth system indicators suggests that a fundamental shift in the makeup of the planet is ongoing (Steffen et al., 2015). The amount of carbon released into the atmosphere is unprecedented over the last 66 million years (Zeebe, Ridgwell, &

Zachos, 2016). This has precipitated a sharply rising warming trend. In 2016, surface temperatures were the warmest on record since modern recordkeeping began in 1880 (NASA, 2017). Beyond the precipitous warming of the oceans and of surface temperatures, human actions have led to steep declines in biodiversity, atmospheric increases of nitrous oxide, acidification of the oceans, and much else. Indeed, as some now argue, the Earth may be in the midst of its sixth mass extinction in its 3.7 billion year history – and the first to be caused by a single species (Kolbert, 2014). Humans can now be classified as geological, world-making actors. The scale and complexity of human-generated shifts has moved us beyond the limits of existing knowledge. We are entering a new human-made world that we do not understand.

This presents, of course, significant and unique security challenges. While the security implications of environmental change have been identified and assessed for decades in relevant literatures such as green criminology and environmental security, environmental problems are now more severe, increasingly impactful, and perhaps most importantly, more fully global (though their effects are often local and contextual) than ever before. Ongoing changes to the climate, biodiversity, and a host of other Earth system processes hold significant implications for interstate conflict, civil strife, and broader human development (Green & Hale, 2017). They will produce environmental insecurities that cause crime and inequality. They will challenge prevailing norms and structures that order environmental harms, laws, and regulations. An Anthropocene future portends significant sea-level rise, the displacement of peoples, diminished crop yields, the spread of disease, and increasing water scarcity in areas already struggling to secure enough water. These are not typical “everyday” environmental problems; they hold the potential to radically disrupt global politics, how we govern the public good of safety, and contemporary logics of security. The Anthropocene does not simply add more environmental concerns to existing security frameworks, it pushes ideas of security to their limits. No security theory can make sense of 200 feet of sea-level rise (Winkelmann et al., 2015). Or, take for instance, scientific estimates that place current extinction rates 1,000 times higher than normal, and future rates that are likely to be 10,000 times higher (De Vos et al., 2015). If the world is now experiencing a “sixth mass extinction,” the first

to be caused by humans, we need to reconsider the logic of the traditional security problematique – ensuring the promise of safety and survival (Harrington, 2016). Further, if the Anthropocene destabilizes one of the organizing tenets of modernity upon which security rests — the separation between humans and nature — then scholars need to creatively confront the empirical and theoretical implications of this new world.

It is this latter disruption — the dissolution of human-nature dualism — that lay behind our challenge to security scholars to interrogate the role and prevalence of *entanglement*, particularly the entanglement of Earthlings with each other and with the Earth system of which they are a part. The idea of entanglement goes beyond past understandings of interdependence and networked connections and compels us to question the idea that any entity — human or non-human, sentient or non-sentient, bio-physical or physical, macro or nano — can be truly distinct. Entanglement instead suggests that “systems must always be conceptualized within collective terms” (Taffel & Holm, 2017, p. ix). As the authors in this Special Issue highlight, the Anthropocene provides us with a striking illustration of this condition, making apparent the ways in which human societies are entangled with something we once called “nature”. While nature has never been an entity that existed outside of humans and society, phenomena such as climate change, ocean acidification, stratospheric ozone depletion, and land-system changes highlight how deeply human action can, and has, reshaped our biophysical realm, and similarly, how biophysical systems have shaped human life.

A recognition of entanglement compels us to reconsider the diverse ways in which subjects and objects co-exist and are co-constituted. Instead of a world comprised of distinct entities (eg, states, individuals) interacting in the rational pursuit of their interests, entanglements inform us of the indistinction of actors in the first place. It is not simply that humans are a part of nature. The social and the natural have become indistinguishable. In Bruno Latour’s words, “[t]o be a subject is not to act autonomously in front of an objective background, but *to share agency with other subjects that have also lost their autonomy*” (2014, p. 5, italics in original). Our worlds are plural, enfolded, inseparable — entangled.

Understanding what this means for security after long imagining ourselves as separate, superior beings, is difficult. Entanglements are always in flux, and thus we must look at their different strands, their original preconditions, and their complex, diverging consequences. For guidance it is useful to look to a domain that has led the way in exploring entanglements — quantum physics. Quantum thinking has problematized conventional, atomistic conceptions such as: “large objects are reducible to the properties and interactions of smaller ones”; “objects have definite properties”; and “objects are fully ‘separable’, meaning that their identity is constituted solely by their internal structure and spatial-temporal location rather than by their relationships to other objects” (Wendt, 2015, p. 60). Within quantum thought — which Einstein famously dismissed as “spooky action at a distance,” (Born, 1971, p. 158) — entangled particles, existing on opposite sides of vast spaces might be considered, for all intents and purposes, as one object (Neep, 2016, p. 21). When one particle is observed/measured, it instantaneously causes shifts in its entangled other, accordingly, they can no longer be described in the same way, as separate objects. To know a *whole* system requires, not the breaking of it into its constituent parts, but recognizing its entangled relationships.

For some readers our trio of concepts — security, entanglement and the Anthropocene — may at the outset appear esoteric or disjointed. While green criminology and global environmental security have research programs that are decades-old, only recently have scholars in these traditions begun to turn their attention to the Anthropocene crisis (Dalby, 2016; Fagan, 2016; Mitchell, 2014; Hamilton, 2016; Burke et al., 2016; Harrington, 2016; Shearing, 2015; Floyd, 2015; Harrington & Shearing, 2017). As for the implications of entanglement for ideas and practices of security, these remain largely speculative.<sup>1</sup>

Yet, given all we now know about the character of the Anthropocene, with its multi-scalar systems made up of individuals, communities, ecosystems, and technologies that

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<sup>1</sup>As always, there are important exceptions. “Project Q”, a transnational research group housed at the Centre for International Security Studies at the University of Sydney has in recent years examined the peace and security implications arising from the quantum age.

flow across boundaries, there is a pressing need for interdisciplinary, empirical and theoretical work that connects security, entanglement and the Anthropocene. This is so despite the fact that many remain sceptical that either the Anthropocene or entanglement concepts offer something profoundly new, or argue that it fails to provide the type of political escape route needed to deal with ongoing environmental catastrophes (Autin & Holbrook, 2012; Fagan, 2016). Nonetheless, the Anthropocene is more than a fad or passing trend. To be sure, it contains multitudes and contradictions within it that do not produce easy or comfortable answers. But it offers us unique ways of seeing and understanding a wider, more complex and connected ecology than previous generations of security studies have allowed.

The contributors to this volume – security scholars from different disciplines – were invited to explore how security might be conceived, reassembled and re-enacted within an entangled world in which humans are a set of things among many. This presented three challenges posed by the condition of entanglement:

1. Recognizing our entanglements invites us to rethink our conceptualization of how “things,” impact security. It requires us to broaden our analyses to include the “social life” of non-humans, objects, and materials.
2. Entanglement troubles the social scientific idea of the agent and upsets the long-held assumptions of rational, unified actors, detached from the world around them. Figuring out the roles and responsibilities of security actors has never been harder.
3. Finally, the condition of entanglement in the Anthropocene complicates our ideas about the future. In particular, it requires us to consider how the world is preparing (or not preparing) for a future that will be radically different from the past and present.

The authors of this volume have reflected on the following two questions:

- How do we bring the Anthropocene into the study of security?

- What does it mean to be secure in an entangled world?

The six articles included in this Issue each approach these challenges and questions very differently. They construct conversations that include unique, often contrasting, voices, which reflect the very different perspectives of the authors and their locations across the field of security studies. They do not all cohere to a single message or advise a uniform course of action. They rarely overlap in terms of their subject matter. To us, this is not a problem, but accurately reflects the intellectual diversity that must be built into Anthropocene studies. There is no single way to bring security into the Anthropocene and we do not wish to contribute to a singular “Anthropocene School” that orders interpretation. The new age is too vast, too complex. Instead we believe we should embrace the plurality of voices and begin building new security edifices that match and reflect the creativity of the world.

The articles can be thought of as tackling two dimensions of the entanglement and security question. The first three articles examine different empirical realities that reflect Anthropocene entanglements. In “Food security and secure food in the Anthropocene” Scott Lougheed and Myra Hird trace the contemporary Western food systems to shed light on entanglements of human and others, living and non-living, biological and inorganic. Via an examination of the flows of food, Lougheed and Hird argue that as different societies seek to secure their food systems, they enact very different biopolitical forms. Safety and security become the product of waste, which is itself an encounter between humans and the inhuman. Jan Froestad and Clifford Shearing focus their gaze on the entangled relationship of energy and human wellbeing. They trace how Holocene wellbeing was created through fire regimes, with each different energy enrolment shifting human ways of being in often quite fundamental ways. In their view, energy security has emerged as a defining geopolitical issue of the 21<sup>st</sup> Century. The pursuit of ever greater amounts of energy to provide for human wellbeing has, they argue, led us into an “entropy trap”. To escape this trap Froestad and Shearing argue that a radically decentralized, modular and “green” energy infrastructure is required. Emma Lecavalier and Cameron Harrington take up the challenge of security entanglements by asking what

it means to take materiality seriously. To do so they hone in on the case of energy transitions in India to trace how the materiality of coal has influenced the character and depth of energy transitions. They argue that human entanglement with coal begins long before the mineral is transformed into energy. They suggest that as societies struggle to break free of “carbon lock-ins” they might do well to consider the inter-linkages between coal itself and the social world in which it is enlivened.

The second trio of articles offer theoretical interventions on security in the Anthropocene. Mariana Valverde’s article argues that our contemporary environmental crises require us to revolutionize our theoretical toolbox. She employs Foucault’s genealogy of Western Man as a way to reflect on how the Anthropocene challenges key western conceptual categories of crime and security such as “acts”, “persons” and “institutions.” As we move further into an age of entanglement, Valverde suggests that scholars must engage far more with long-existing indigenous traditions that centre relationships rather than individuals in legal and political thought. In so doing, we will be able to enact new measures to combat the ongoing damages to the Earth, while simultaneously listening to those peoples who have suffered the most from environmental injustice. Like Valverde, Marc Schuilenberg and Rik Peeters also draw from Foucault. They argue that the Anthropocene demonstrates how classic forms of risk regulation (eg, contracts, laws) have produced new pressures that in turn create new forms of complex governance modalities. Turning to other thinkers like Mauss and Harcourt, they focus on the emergence of “gift relations” as a way for governance actors to manipulate security politics specifically, and human behaviour more broadly. In this reading, the Anthropocene offers new ways to punish and reward (often simultaneously) human behaviour. Gift-giving in the Anthropocene ends up blurring previously demarcated lines between governments and citizens and between public and private relations. Our issue concludes with Scott Hamilton’s “Securing Ourselves *from* Ourselves? The Paradox of ‘Entanglement’ in the Anthropocene.” Hamilton offers a critique of entanglement discourses. He suggests that ironically the effects of the Anthropocene may well be leading to a further *dis*-entanglement of humans and nature. Hamilton cautions scholars, who are drawn towards quantum and other forms of entanglement theorizing, to tread

cautiously as they enter this new terrain. Doing so, he argues, often obscures, rather than replaces the neo-Newtonian, Western cosmology, and endangers any hope of adequately responding to Anthropocene crises.

Taken together, the articles in this issue invite us to reflect on Anthropocene entanglements - what they have meant, might mean, and perhaps should mean, in order for us to exist securely in the new world.

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