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Title: Speaking Power to ‘Post-Truth’: Critical Political Ecology and the New Authoritarianism

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Abstract

Given a history in political ecology of challenging hegemonic ‘scientific’ narratives concerning environmental problems, the current political moment presents a potent conundrum: how to (continue to) critically engage with narratives of environmental change while simultaneously confronting the ‘populist’ promotion of ‘alternative facts’? We ask how political ecologists might situate themselves vis-à-vis the presently growing power of contemporary authoritarian forms, highlighting how the latter operates through socio-political domains *and* beyond-human natures. We argue for a clear and conscious strategy of ‘speaking power to post-truth’, so as to enable two things. First, to come to terms with an ‘internal’ paradox of addressing those seeking to obfuscate or deny environmental degradation and social injustice, while retaining political ecology’s own historical critique of the privileged role of Western science and expert knowledge in determining dominant forms of environmental governance. This involves understanding (post-)truth, and its twin pillars of ‘alternative facts’ and ‘fake news’, as operating politically by those regimes looking to shore up power, rather than as embodying a coherent mode of ontological reasoning regarding the nature of reality. Second, we differentiate ‘post-truth’ from analyses affirming diversity in both knowledge and reality (i.e. epistemology and ontology, respectively) regarding the drivers of environmental change. This enables a critical confrontation of contemporary authoritarianism whilst still allowing for a relevant and accessible political ecology which engages with marginalized populations most likely to suffer most from the proliferation of post-truth politics.

Keywords: post-truth, political ecology, science, authoritarianism, environmental policy.

Introduction

‘Post-truth’ is the latest manifestation of a long, troubled history in the relation between truth, politics and power. Indeed, it is hardly a revelation that politicians selectively choose (or construct) their facts in order to serve particular ends. Yet, the current political moment has also managed to provoke a heightened level of anxiety about the nature of truth in science and politics that has emerged as particularly disruptive (see Chan et al. *this issue*). This anxiety has ushered in new language with terms such as ‘alternative facts’ and ‘fake news’ becoming part of an everyday vocabulary.ⁱ For geographers, and in particular political ecologists, ‘post-truth’ presents a familiar yet intensified challenge. Post-truth provokes questions for scholars critical of scientific institutions and their knowledge-making practices that shape environmental policy, given that these same institutions are now under attack from populist authoritarian discourse and policies.

A paradox thereby emerges between working with, whilst also problematizing, the production of knowledge associated with positivist science – a paradox that demands both reflection and action from critical political ecologists and activists alike (Robbins 2015). How can political ecologists mount an effective challenge against the propagation of ‘alternative facts’ in service of populist authoritarian agendas, whilst also embracing multiple knowledges and realities associated with cultural and linguistic diversity (de la Cadena 2010; Burman 2017)? How can we defend this stance against charges that our dismay with post-truth politics stems from an elite, liberal ‘chagrin at the fact that the wrong kinds of people are suddenly claiming authority and having their say?’ (Mair 2017: 3). Finally, how can political ecologists, many of whom have long insisted on the need to analyze the politics of knowledge production within science, work *with* science to show that the form of critical engagement we advocate and practice is different from those propounded by the authoritarian right?

Both political ecology and ‘post-truth’ politics take issue with certain, hegemonic types of ‘truth making.’ⁱⁱ It is political ecology, however, that concerns itself with the epistemological violence effected through the ‘coloniality of reality’ that subjugates cultural, and especially indigenous, diversity in relation to ecological knowledges and praxis (Burman 2017; Sullivan 2017). Our main contribution in response to this is to affirm the necessity of ‘speaking power to post-truth’ (Collingridge and Reeves 1986): by amplifying an inclusive, effective and publicly accessible political ecology that both refracts populist (re)framings of socio-environmental concerns – at times mobilizing and allying with positivist science in order to

do so (King 2010; Brannstrom and Vadjunec 2013) – and organizes to contest mechanisms of authoritarian power.

This strategy, **first**, situates political ecology as a useful bridge to a diversity of approaches that probe the co-constitutive relationship between environmental politics and scientific truth making (Jasanoff 2006). It recognizes and welcomes the conceptual convergence between, for example, political ecology, Science and Technology Studies (STS) and anthropology (Goldman et al. 2011; Rocheleau 2008; see Chan et al. *this issue*). Combining perspectives across these approaches means accepting that knowledges do not necessarily become authoritative because they more accurately portray ‘the truth’. Rather they become paradigmatic as ‘the truth’ in part through their generation and endorsement in politically empowered networks as the ‘best’ means of uncovering the truth (cf. Kuhn 1970; Foucault 1980; Guthman and Mansfield 2013). Foregrounding (once again) these relationships between political power and truth claims makes it possible to clarify the mechanisms of knowledge production and exclusion, and thereby to clarify possibilities for their contestation (Hulme 2010).

Second, as well as having an established history of critically analyzing environmental ‘truth making’, political ecologists are experienced and motivated in acting and collaborating beyond ‘the academy’ so as to speak ‘power to post-truth’ through new knowledge coalitions and action. Coalitions beyond the academy are about creating an accessible political ecology which can empower a politically engaged and informed resistance to current post-truth narratives. We argue that political ecology and cognate disciplines can combine with reflexive scientific knowledge production to offer collective responses within this eco-political moment. This sort of ‘critical political ecology’ (Forsyth 2003) contributes to broader public discourse, and builds upon recent attempts to decolonize knowledge production inside and outside the academy not by creating a geographic and academic silo, but rather to be united against a reductive and regressive post-truth debate.ⁱⁱⁱ

Below we provide a brief genealogy of political ecology in relation to post-truth. We follow this offering three interrelated areas for intervention which, taken together, articulate a political ecology counter narrative to ‘truth-making’ whilst remaining critical of authoritarian attacks on knowledge production. We insist throughout that it is possible to retain our critical stance towards scientific knowledge production through careful positioning of it within the circuits of its own production. When this same critical approach is applied to ‘alternative

facts’, we can show that these are not new ways of knowing, but rather new mechanisms of deploying power within an erstwhile and reductive ontology that colonizes other ways of knowing.

Political ecology beyond post-truth

Political ecology has long been concerned with authoritarian forms of power and politics in relation to environmental knowledges, policies and infrastructures, as well as to understandings of the materiality of nature itself.^{iv} At its core, early political ecology analyzed historically and spatially situated (and differentiated) power to access and control natural resources originally seen through class, and later through other forms of social difference such as gender, ethnicity, age, and for some, sexuality. Political ecology thereby brought into focus how ‘the environment is an arena of contested entitlements, a theatre of which conflicts or claims over property, assets, labor, and politics of recognition play themselves out’ (Peluso and Watts 2001, 25; Rocheleau et al. 1996). A second related dimension of political ecology soon emerged which involved a more post-structuralist understanding of the politics of environmental knowledge production and its material-discursive interplay with environmental governance (Escobar 1995; Peet and Watts 1996; Stott and Sullivan 2000). Reflecting the influence of Michel Foucault, a key emphasis has been on the institutional and other societal structures through which environments and environmental truths are defined, known, and therefore controlled and managed (Peet and Watts 1996; Robertson 2006; Burke and Heynen 2014).

A series of early empirical studies showed how local ecological problems had origins in trans-scalar political and economic contexts, rather than merely the allegedly ‘maladaptive’ behaviors of local land users (Watts 1983; Blaikie and Brookfield 1987). Environmental processes were presented by apolitical (and Malthusian) ecological analyses as caused by small-scale producers, while research in political ecology demonstrated how these ‘problems’ were incorrectly explained, or largely exaggerated, thereby challenging ‘received wisdom’ on environmental degradation (Fairhead and Leach 1996). An outcome of these studies was that there were different ways to manage the environment locally, which were frequently bypassed by mainstream environmental policies. While, for Forsyth (2003, see also Benjaminsen et al 2010), this also meant linking political economy and epistemologies of environmental change to *empirically* challenge these sometimes more dominating environmental policies.

Whilst certainly ‘critical’, such challenges to dominant narratives and theories are – as the explicitly anti-authoritarian, *The Open Society and its Enemies* (Popper 1971) observed – simply an integral feature of good (social) scientific inquiry. A certain degree of skepticism toward knowledge claims and findings is part of conventional scientific practice. As such, political ecology’s relationship to environmental science has over the years been complex. Playing the ‘trickster’, political ecology both engages and borrows methodology from mainstream land change science, hazards and environmental health, only to ‘...to undermine them, demonstrating power-laden implications in any such foundational account of human/environmental relationships’ (Robbins 2015, 93).

Recently, political ecology has been shaped more explicitly by postcolonial, subaltern, feminist and queer critiques, opening up new avenues to counter ‘universalizing dimensions’ of knowledge production associated with western science and modernity (e.g.; Nightingale 2006; Burman 2017; Sullivan 2017). Political ecologists have also found fertile ground in debates emanating from assemblage theorists in Actor Network Theory (ANT) within STS, emphasizing how environmental phenomena and governance are mediated by technology and materiality (Bennett 2010), and the roles of beyond-human actants in socio-techno-natural assemblages (Castree and Braun 2001, Kosek 2006; Goldman et al. 2011).^v

Equipped with these new epistemological and ontological tools, political ecology has both the ability to distinguish itself vis-à-vis power, especially in its contemporary authoritarian forms, and to push similar work to explore how these forms of power operate through socio-political domains *and* ‘non-human’ natures. Therefore, in echoing contemporary calls to scrutinize ‘alternative facts’, political ecology’s attention to power-laden scientific claims is well equipped to examine differing environmental representations in order to expose the multiple ways in which power operates to produce, maintain, and privilege particular ‘truths’ about the environment.

The openness and fluidity of post-structuralist approaches to knowledge production, however, lend themselves both to the over-complexity of socioecological circumstances and to co-optation by ‘far right’ agendas. The latter have knowingly borrowed tactics and strategies utilized by left-leaning activists and scholars to highlight the politics of knowledge production, so as to push for the acceptance of ‘alternative facts’, and to relativize the views of scientists and right-wing ideologues (Nagel 2017). Thus, the awkward conceptual

resemblance between ‘alternative facts’ and academic debates about the ‘politics of knowledge production’ is not mere coincidence.

Yet, there are crucial distinctions to be drawn between critical approaches of scientific practice and the tactics now adopted by the alt-right. A critical approach to the environmental sciences underscores the ways in which power constitutes, moves within and reproduces socio-material relations to shape which knowledges, social relations, practices (and corresponding ecologies) are hegemonic. For example, while not always accomplished, many political ecologists attempt to challenge dominant environmental narratives and recognize multiple non-western knowledge perspectives to analyze the production of uneven environmental outcomes for diverse individuals and populations (Burman 2017). Such groups and individuals are stratified by differences and inequalities of – *inter alia* – class, ethnicity, gender, and are commonly those most vulnerability to socio-ecological shocks or stressors. These forms of difference and inequality in turn shape and are shaped by environmental change processes themselves (Nightingale 2006). Moreover, by observing every day and mundane forms of authoritarian power and governmental control, critical political ecologists have sought to take account of how knowledge and governance of resources are actively resisted and been a focal point for empowerment of marginalized groups through both individual and collective agency (Li 2007; Wolford 2010).

Future political engagement by political ecologists and others therefore needs to sharpen their focus on knowledge production and who holds the power to define ‘truth’ (Gramsci 1971; Foucault 1980).^{vi} This ontological politics probes the values, relations and practices through which some forms of knowledge (epistemologies) come to be accepted as more true than others. One way forward could be to carefully distinguish between the ontological and epistemological politics of asserting that there are many ways of knowing, measuring and relating to, or being in ‘different’ worlds (ontology). If we accept the notion of multiple ontologies (that what the world is can be different across communities of knowing), political ecologists have much to say about the socio-material relations through which multiple ontologies arise and are sustained. And, there is a corollary epistemological politics of asserting the ‘truth’ about how one ostensibly should know or live in a ‘single’ world. This latter stance largely rejects the notion of multiple ontologies and rather probes how asserting a single epistemology (how we can know the world), is inextricably bound up in claims to authority.

One role for political ecologists is to illuminate how the privileging of alternative facts exacerbates tensions between different ontologies, and thereby claim space for competing knowledge claims. Collectively, we take the position that feminist political ecologists' deep engagement with power and privileged forms of environmental knowledge construction may help guide us to navigate the paradox of post-truth politics. Demonstrated below, we strive to make political ecology, in all its forms, more relevant, accessible and engaging to (newly) marginalized populations while work to bridge the binary of science and activism closely with social movements towards new 'liberation ecologies' (Peet and Watts 1996) and alternatives to sustainable outcomes (Cavanagh and Benjaminsen 2017).

Speaking Power to Post-Truth

A constructive and critical political ecology, then, is about meeting power with power, mobilizing not only the discourses and social networks of critical scholarship, which at times can be just as universalizing in their own right, but also publicly informed elements, such as collective action, and activism or what we define throughout as 'speaking power to "post truth"'. Taken together, we argue that we can effectively counter the purveyors of 'post-truth' and their inventive uses of environmental messages. This requires not only exposing the workings of power in the generation of alternative facts, but also in consolidating an alternative edifice of knowledge production, policies, institutions and relationships that can counter authoritarian politics with new social (and socio-natural) relations. This is not only about building a 'better', more nuanced version of 'science' via the practice of political-ecological research, but also to harness more-than-scientific resources in ways that seek to change rather than merely describe the world (Castree et al. 2010).

We call for a sensitivity to the power of both ontological and epistemological politics through which environmental issues are defined and known, and which thereby shape conflicts (Blaser 2013; Escobar 2016). We put forward three pathways, *expose*, *teach and learn*, and *engage* to show how an effective political-ecological critique might look like. Our aim is to inspire a response that counters post-truth, to think about how to engage with the public that form enduring resistance networks to authoritarian power. We caution, however, that this should not be read as a singular prescriptive solution, but rather we advocate for multiple emerging pathways to counter and resist the onslaught of authoritarian 'post-truth' narratives.

A. Expose

The power of political ecology is that it cuts through post-truth to *expose* it. Political ecology is not alone in this as there have been many other fruitful attempts to deconstruct science debates in STS.^{vii} However, political ecology has been at the forefront of calling out the role of powerful authoritarian states, individuals and corporations who link this post-truth discourse to policy, take shortcuts with democratic rights, especially with territorially-based and indigenous communities, and even with global planetary health (Batterbury 2016). Alternative facts are often central to such efforts. This perhaps involves political ecology's role as the 'trickster, both mimicking and calling out hegemonic science and political discourse (Robbins 2015), but more its willingness to use this science to critically think about how truth claims emerge and can be judged.

For example, the framing of climate change brings powerful actors, institutions and capital together shaping the political economy of oil (Bridge and Le Billon 2017). This kind of culturally, historically and politically contextual analysis shows that alternative facts on climate change emerge from within the same relations and logics that perpetuate current capitalist projects, rather than existing as an alternative to a capitalist worldview. This needs to be distinguished from the kinds of alternative ontologies that sit outside of capitalist projects, such as those held by indigenous peoples (Anthias 2018; Theriault 2017; Sundberg 2010; Valdivia 2009). However, *exposing* unsubstantiated 'alt. facts' will not suffice. The role of political ecologists is to expose power, profitmaking, and threats to environment and social justice (Martinez-Alier 2016; Nightingale 2017). This is reflected in the work of environmental justice organizations and other NGOs, like the EJOLT project (<http://www.ejolt.org/project>) and *Accion Ecológica* in Quito, who brave personal risks to expose environmental 'in-'justices and make essential links between scholars and EJ activist networks.

Power that coalesces through exposure is not singular, but can take many forms. For example, the Environmental Justice Atlas, or the growing POLLEN initiative (<https://politicalecologynetwork.com/>) which links academic output to social media and political journalism (see Bill Moseley <http://www.aljazeera.com/profile/william-g-moseley.html>). Another way to expose is through collaborative attempts, such as the ENTITLE writing collaborative, which mainstreams critical environmental scholarship

through less known public and activist stories. It aims to link policy makers, scientific researchers and activists, ‘through engagement in movements and institutions’ (<https://entitleblog.org/>). Meanwhile, the network of academics and non-profits working under The Environmental Data & Governance Initiative (EDGI - <https://envirodatagov.org/>) are on the front lines exposing authoritarianism threats to progressive US ‘federal environmental and energy policy, and to the scientific research infrastructure’ meant to ‘investigate, inform, and enforce them’ (See Chan et al. *this issue*).

These efforts are a small sampling of the initiatives taken by political ecologists to link across communities of knowledge. Core questions that emerge in these efforts are: whose voices are privileged and which are marginalized, even within collaborative projects? It is arguably more important than ever, in an era of ‘post-truth’, to use the counter-narratives and explanations generated by political ecologists to evaluate robust empirical findings and data.

B. Teach and Learn

Going beyond exposure, political ecology *teaching* and *learning* can expand the impact of our critique of alternative facts. Geographers are learning fast that effective communication can challenge authoritarianism through deliberately communicating, publishing, increased social media presence, and moreover, mobilizing this effectively to students and the broader public. For example, political ecologists have been at the forefront of recent attempts at ‘decolonizing’ how ecology and the Anthropocene (Schulz 2017) are delivered in the classroom and approached by the institutions that structure them (e.g., Osborne 2017; Fletcher 2017; Meek and Lloro-Bidart 2017; Meyerhoff and Thompsett 2017). These efforts serve to decenter *some* forms of science as hegemonic ways of knowing, while at the same time, providing students with the critical skills to place *all* ways of knowing within the power relations that perpetuate them.

Feminist political ecologists have been at the forefront of the co-production of knowledge with people outside academia and how values and facts that drive outside involvement combine in everyday politics. Wendy Harcourt and colleagues have overseen a movement to engage feminist political ecology with grassroots organizations worldwide that brought forward insights into how smaller scale, localized resistances to hegemonic economic and political relations can succeed (Harcourt and Nelson 2015). The recently formed WEGO (Well-being, Ecology, Gender and Community) network will collect together knowledge of local communities’ own understandings of strategies to build resilient and equitable futures.

This work highlights the co-production of knowledge to help community and network activists better understand the institutional, economic and political contexts that serve to support or inhibit their efforts. Scholars engaging in these practices also gain experiential and in-depth understanding of alternative ontologies and visions for a better world. These efforts have shown the importance of scholarship in not only exposing, but also learning from community efforts at challenging hegemonic relations of power.

Other efforts at co-production of knowledge through teaching and learning include the ENTITLE collective's political ecology syllabus (<http://www.politicecology.eu/>) that produces scholarship through community building and stimulating dialogue among 'diverse communities' (Harcourt and Nelson 2015; Mann 2011) albeit ones that are most likely to use web based resources for learning. Political ecologists can learn from recent de-colonizing efforts that call for new forms of 'epistemic disobedience' –political and epistemological de-linking of one's colonial past (Mignolo 2011: 4; Hawthorne and Meché 2016). A good example of this *learning in practice* through disobedience is the historical problematizing of neoliberal or market-conservation through displaced peoples' local practices and knowledges (e.g., Igoe, Sullivan and Brockington 2010). However, the key is to not only bring to light meaningful political ecology research, but to integrate this learning, both within the academy (Sundberg 2014), and through networks of resistance (Chan et al. *this issue*).

C. Engage

Some political ecologists have taken the notion of learning to another level by trying to translate it directly into policy arenas. For example, Ojha et al. (2013) have experimented with policy labs in the forestry sector (earlier called *Ban Chautari*, but now used beyond the forestry sector to deal with climate and water issues) to generate critical thinking about environmental governance questions for which expertise is inadequate. Policy labs bring together political actors and sectoral specialists (i.e. hydrologists, agricultural officers, and forestry officers) to tackle environmental governance problems. Using Chatham House rules, policy labs are designed to create safe spaces of ignorance, encouraging people to ask questions rather than providing answers. A core concern is to show how different sectors are linked together, the histories surrounding how and why that is the case, and where their agendas are conflicting. This helps to place the issues at stake within a wider contextual frame and can offer opportunities for everyone involved to learn and generate new critical ideas about action.

A renewed focus on rights infuses geographical work, faced with threats that are existential and real, and geographical – from border policing to renegeing on international treaties and agreements (Sundberg 2010). Social scientists have a particular duty to call out the broader publics’ - from civil society groups and individuals to those marginal or invisible - scientific rights from participation (Neimark and Vermeylen 2017). For instance, the ‘Political Ecology for Civil Society’ open access publication by the ENTITLE group is an excellent example of bridging the gap between activists groups and critical social science (ENTITLE 2016). Also relevant is the Emancipatory Rural Politics Initiative (ERPI) work on ‘authoritarian populism’ which looks to provoke debate and action among scholars, activists, practitioners and policymakers on how ‘exclusionary politics are deepening inequalities’, through issues of growth, climate disruptions, and social division, and focused on generating alternatives to regressive, authoritarian politics (Scoones et al. 2017). There are even more overt political campaigns that require new alliances and coalitions (de Vrieze 2017) around anti-fracking, food sovereignty movements, and pollution clean-up (Cambell and Veteto 2015; Hudgins and Poole 2014; D’Alisa et al. 2017).

Yet, new opportunities beyond academia have also opened up. These are particularly in settings less examined by political ecologists, but nonetheless at the heart of current political dynamics around post-truth. They include rural white working-class communities who are generally (mis)represented as, ‘conservative, xenophobic, and reactionary’ (Van Sant and Bosworth, 2017), but which many times also share experiences of marginality and forms of local knowledge with some of the subjects traditionally examined in political ecology studies (McCarthy 2002). While political ecology is effective in highlighting political activism and social movements, if anything, it has been historically less successful at delivering its research results in ways that are easily mobilized to diverse political coalitions. It is these diverse political collations where we argue political ecology research if delivered to non-academic settings can gain traction in countering post-truth narratives.

Public outreach beyond academia is therefore vital. Political ecology’s Public Political Ecology Lab (PPEL) is one important public outreach project (<http://ppel.arizona.edu>). It narrates the need for practical and political engagement through academic work, providing training on research methods (participatory action research) and pragmatic media and communication skills to activist minded students and the wider public. It also provides an online forum to make vital connections between community organizations and graduate students for direct impact. Similarly, the rapidly growing Political Ecology Network

(POLLEN) is now reaching beyond Europe to facilitate exchanges with a number of ‘nodes’ consisting of non-Western institutions, academics, and civil society organizations. As Martinez-Alier et al. show (2014, 49), there is a ‘reverse movement’ of concepts and ideas coming from environmental justice organizations to academic political ecology, thereby, ‘... favor[ing] cooperation between activist and academics because they do not compete for the same turf’. This demonstrates the potential for scientists, political ecologists and activists to form essential alliances to counter post-truth discourse and new forms of authoritarianism.

Conclusion

If anything, political ecologists are responding to contemporary authoritarianism, drawing attention not only to injustice, but also to social and political resistance through collective action around the world. However, to be effective, we need to move beyond just illustrating obvious tensions which exist within our own practice and praxis. We must question ‘truth’ based on empirically-based natural and social science through multiple perspectives, while also explicitly amplifying an inclusive, effective and publicly accessible political ecology which ‘speaks power to post truth’. Crucially, we must continue to explore links between knowledge and authority, both in our own scholarship and other very relevant cognate studies, but also with and as we evaluate knowledge claims emanating from different—highly unequal—communities across the globe.

If anything, our collective response to this post-truth moment is to call out the dominant hegemonic discourses that accompany alternative facts through patient exposure of the links between power and knowledge, and through seeding new counter-initiatives, including both how facts and norms are made together, and create facts on behalf of marginalized groups. As those on the political far right successfully adopt post structural ideas and techniques and methods of grassroots activism to maintain authoritarianism, political ecologists need once again to re-appropriate these methods of public engagement and civil action. This is a long and difficult project and by no means do we pose a single solution here. Yet, our collective goal is to add some tactics and useful analysis, making our scholarship more relevant, accessible and engaging to the marginalized populations most likely to suffer from the proliferation of post-truth politics, notably around the denial of climate change and its impacts.

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ⁱ Since being used by the US President's special councilor to defend demonstrably false statements by the White House Press office, the term 'alternative facts' has used widely in the media to question the relationship between science and truth. Similarly, President Donald Trump makes personal and repeated dismissals of major international media and research outlets as 'fake news'.

ⁱⁱ Although used somewhat interchangeably, we recognize that hegemony and dominant forms of science, and knowledge, are not necessarily always the same (see Guha 1997).

ⁱⁱⁱ Critical political ecology is an open-ended and empirically based approach that combines deconstruction with a realist belief in science as a means to achieve a more accurate description and understanding of environmental realities. This is not the only attempt to do this. In fact, there is a long history of previous work in 'critical realism' to integrate socio-political values with positivism (see Bhaskar 1997) and also to some degree in sustainability science (see Clark 2016).

^{iv} We do not provide a review of political ecology, but rather a snapshot of some examples of its breadth; for fuller reviews see Robbins 2011; Bryant 2015; Perreault et al. 2015.

^v Albeit a key theme in earlier political ecology, our hope is that given the particular political climate of post-truth more studies today can re-emphasize the importance of the emergence of 'facts' simultaneously with values and structure.

^{vi} From this perspective, 'truth-making' is more about establishing an effective hegemony (understood as the articulation of different interests around a common cause) than trying to champion a particular constellation of 'facts'.

^{vii} Although STS does include debates around positivist science and many, particularly those geographers and others adopting the language of 'assemblage' claim their frameworks do explain the entanglement of facts simultaneously with values and structures, it is critical political ecology that has been much more willing to adopt positivist science as a tool to counter dominant scientific claims.