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Conceptualizing Archetypal Anthropocene Societies: An Institutional Framework

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Abstract

As the anchor point for this special issue, physical scientists have recently proposed that humankind has entered a new geologic epoch. Termed the "Anthropocene," this new reality revolves around the central role of human activity in several Earth ecosystems. In our paper, using an institutional theory lens, we explore what this change in our natural environment means for our social environment, termed "Anthropocene Society." Relying on the constitutive elements of institutional orders and a set of main change mechanisms, we offer three archetypes around which future Anthropocene Societies might be built – Market Means, Technology Fix, and Cultural Enlightenment. This presentation of the social orders then begs the question "toward what archetype do we seem to be headed?" In answering that, we conclude with the presentation of two near-term scenarios – Deepening Contestation and Challenge-Driven Change – which are built upon different mixes of these archetypes. As such, this paper provides a framework for conceptualizing the future of Anthropocene Society and also brings the natural world more centrally into our institutional analyses.

"The Anthropocene is not a problem for which there can be a solution. Rather, it names an emergent set of geo-social conditions that already fundamentally structure the horizon of human existence. It is thus not a new factor that can be accommodated within existing conceptual frameworks, including those within which policy is developed, but signals a profound shift in the human relation to the planet that questions the very foundations of these frameworks themselves" (Rowan, 2014: 9).

The human species is facing a unique moment in its history, one in which our influence on the natural environment has shifted from shaping and damaging a variety of local ecosystems to now taking some control of global ecosystems, with potential catastrophic effects on their health and our existence (Diamond, 2005). Geoscientists have labeled this new physical reality "the Anthropocene" (Crutzen and Stoermer, 2000), an era in which humans have a long-term, documentable impact, not only on the operation of terrestrial ecosystems of the planet but also on its very geological strata (Zalasiewicz, Williams, Steffen and Crutzen, 2010; Crutzen, 2002). For bearing this new responsibility, the human species is unprepared to respond. As Stephen J. Gould (1991) warned, we have become "the stewards of life's continuity on earth. We did not ask for this role, but we cannot abjure it. We may not be suited to it, but here we are."

Predictions for a future in this new reality range from dystopian to benign, with some debating whether a "good Anthropocene" is even possible at all (Revkin, 2014; Hamilton, 2014). But the focus of these analyses remains that of changes in the natural environment that make the world less hospitable for the human species: sea level rise, increased weather variability, the movement of vector-borne diseases, etc. Very little of this work actually considers the form of the society that will either interpret these shifts or fashion a response. There is a lack of attention to what might be called "Anthropocene Society" (Palsson et al., 2013). This is not surprising, particularly given the link between the Anthropocene as a concept and the various physical science subgroups that define its specific markers, what geophysicists have termed the nine

"planetary boundaries," (Rockstrom et al., 2009). But as this issue of *Organization* makes clear, there is far greater need for work from within the social sciences on the nature of the Anthropocene and its implications for Anthropocene Society.

The particular challenge in this endeavor is to link technocratic and behavioral approaches, recognizing that current society operates in ways that ignore, blunt or outright oppose messages from the sciences that do not fit within its current social structures (Hoffman, 2015; Lefsrud and Meyer, 2012). Building on emergent research (Hoffman and Jennings, 2015; Jennings and Hoffman, forthcoming; Biermann at al., 2012), we present systematic theorizing at the mid-range level on the problem of Anthropocene science and its translation, using institutional and behavioral mechanisms to generate both archetypes and scenarios for future Anthropocene Societies.

In particular, we lay the foundations for a sociological analysis of a range of possible social futures within the Anthropocene and consider the determinant factors that may lead to one outcome versus another. To anchor this inquiry, we focus on the set of institutional communities and social structures of the Anthropocene Era which, given their interlocked and complex nature, now collectively constitute Anthropocene Society (Palsson et al., 2013). Ultimately, the question of what kind of Anthropocene Societies are possible is both institutional and political in nature (Clark, 2014; Karlsson, 2013; Nyberg et al., 2013). There are many possible Anthropocene Societies, each requiring fundamental shifts in the social rules, norms and beliefs around which our conceptions of the nature of humans, the environment and the interconnections between them are built. Each possible future has implications for particular constituencies - business, technology, policy, religion, virtually all segments of society. In a normative and ideal sense, better Anthropocene Societies would involve a transformation of many preexisting beliefs that

lead to an acceptance of our controlling role in global ecosystems and opens up the pursuit of new paths that either reduce our ecological impact or transition into becoming a net positive influence on the environment (Ehrenfeld and Hoffman, 2013). But to consider such outcomes, we must also consider the social contest they represent and the forms of opposition and support that would emerge from within multiple segments of society. We begin by reviewing some of the existing Anthropocene science and social science as a way to bridge the planetary boundaries identified by physical scientists and the social systems which are threatening them. Then, we apply an institutional framework (Greenwood et. al., 2008; Scott, 2001; Thornton et al., 2012) to examine who has voice and power within field level debates to define the nature of this reality and the responses that will be applied, if any.

Linking the Physical and Social Science of the Anthropocene

"The Anthropocene represents 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. Geologically, this is a remarkable episode in the history of this planet." (Zalasiewicz, Williams, Steffen and Crutzen, 2010).

The Anthropocene Era is a proposed new geologic epoch that acknowledges the role that humans occupy as a primary operating element in the Earth's ecosystems (Crutzen and Stoermer, 2000). We say "proposed", because its formal designation is still being debated in scientific circles, even though it is progressing towards acceptance (Zalasiewicz et al, 2016). This era is argued to have started around the industrial revolution of the early 1800s, and has become more acute since "the Great Acceleration" around 1950 onwards (Steffen, Crutzen and McNeil, 2007). It is marked by the reality that: "Human activity has transformed between a third and a half of the land surface of the planet; Many of the world's major rivers have been dammed or diverted;

Fertilizer plants produce more nitrogen than is fixed naturally by all terrestrial ecosystems; Humans use more than half of the world's readily accessible freshwater runoff" (Crutzen, 2002: 23). Primarily through our economic, political and social institutions, we have collectively moved "more sediment than all the world's rivers combined. Homo sapiens has also warmed the planet, raised sea levels, eroded the ozone layer and acidified the oceans" (Monastersky, 2015).

To delineate the main markers of this era, geophysicists have identified nine "planetary boundaries" (Rockstrom et al., 2009) that represent "thresholds below which humanity can safely operate and beyond which the stability of planetary-scale systems cannot be relied upon:" climate change, ocean acidification, ozone depletion, atmospheric aerosol loading, phosphorous and nitrogen cycles, global freshwater use, land system change, change in biosphere integrity and introduction of novel entities (Gillings and Hagan-Lawson, 2014; Steffen et al, 2015). "Unless there is a global catastrophe such as a meteorite impact, world war or pandemic," these planetary boundaries will continue to be approached as "mankind will remain a major environmental force for many millennia" (Crutzen, 2002: 23).

Approaching and Crossing Thresholds. Scientists have been studying the boundaries of these critical thresholds (Rockstrom et al, 2009), and updating and revising their assessments of our positioning within them. In the most recent assessment (Steffen et al, 2015), the notion of threshold has been refined to include degree of uncertainty (i.e. beyond certainty and increasing certainty zones) about whether a threshold at the global level has been crossed. Based on this new framework (displayed in Figure 1), it has been determined that four of nine planetary boundaries have now been crossed as a result of human activity: Biosphere integrity and biogeochemical flows (nitrogen and phosphorous) are undoubtedly crossed thresholds; climate change and land-system change are increasingly likely thresholds to have been crossed

(Stockholm Resilience Center, 2016).

--- Insert Figure 1 about here ---

While each boundary is important as a distinct category, there are significant questions and concerns about the interaction effects both among them. While two of these, climate change and biosphere integrity, are termed "core boundaries," since significant alteration of either of them would "drive the Earth System into a new state" (Steffen et al, 2015), Rockstrom et al.'s (2009) original formulation noted that "if one boundary is transgressed, all are at risk" (p. 474) with little specificity on the relationships among them, calling instead for more work to link the boundaries in an over-arching model. Toward that end, geoscientists have been exploring various boundary configurations and linkages in order to translate their meaning and refine their measurement at the global, regional and local scales.

At a global level, the most comprehensive efforts to link the Anthropocene boundaries appear to be around the issue of climate change and its spillover effects into the various other domains (Hoffman and Jennings, 2015; Stockholm Resilience Center, 2017; Rockstrom et al, 2009). In fact, many have criticized the elevated attention on climate change to the exclusion of many of the other environmental issues and planetary boundaries that lie before us. It has become, in many ways, an umbrella issue, into which all other environmental issues have been subsumed. For example, temperature by time scenarios have been used to discuss the extent to which habitat destruction, ocean acidification, fresh water use, and biodiversity loss would be intensified by climate change. The threshold of two degrees Celsius has been proposed in both scientific and political domains as a threshold beyond which human systems would be significantly and negatively affected (UNFCCC, 2015).

At a regional and local levels, there has been more concerted effort at linking

environmental and social systems. For example, while some ecological economists have focused on specific boundaries of the Anthropocene – again, most notably climate change (see Stern, 2007) – others have employed systems modeling to link elements of specific ecosystems (such as available land and water) to specific social systems (such as available seed, fertilizer, and labor at various prices) to assess the conditioning effects of market structure and government policies (Filatova, Polhill and van Ewijk, 2016). Exchange of environmental and social factors within these models occurs either through generic, systems mechanisms (Sahlin et al, 2015) or agent-based decisions (Rasch et al. 2015) within simulation models, with parameters checked using comparative system values to determine threshold overruns and their effects.

Similarly, while some behavioral social scientists have worked on specific boundaries of the Anthropocene, others have attempted to link across them, conceptually and empirically, to social systems. Whiteman et al. (2013) reviewed some of these efforts and offered a Planetary Boundaries framework for mapping the nine planetary boundaries around a particular empirical case – the multi-national corporation Unilever's production of palm oil in Borneo -- to show that the company's local effect on land use and biodiversity both reduce regional resilience (in Borneo) and create feedback implications for the global climate system (i.e. through significant global-level carbon releases from regional wildfires). As shown in Figure 2, climate change, ocean acidification, and ozone (and other stratospheric gases) are depicted as planetary scale items, with atmospheric aerosols, freshwater, land use, and nitrogen-phosphorous cycles being more regional, and biodiversity and chemical pollution, local. At each level and in each domain, Unilever's operations influenced ecosystem health spanning the local, regional and global levels.

--- Insert Figure 2 about here ---

As humans are considered to be the cause and primary drivers of the ecological changes within the Anthropocene (Steffen et al., 2015), it seems entirely appropriate and necessary to develop similar models that elevate human behavior and beliefs within Anthropocene science. This is particularly true given the limited ability of scientific findings and models to change the attitudes of many politicians and local populaces about the nature and importance of various Anthropocene boundaries. Indeed, at the time of this writing in 2017, public acceptance of the Anthropocene appears to be under greater threat as the newly elected political leadership of the United States publicly doubts the existence of climate change. Against this backdrop lies the challenge of reversing trajectories and re-crossing Anthropocene thresholds back into safer zones.

The Challenge of Reversing Threshold Trajectories. By ordering the thresholds, from those at the highest risk level (beyond the zone of uncertainty) to those of increasing risk (in the zone of uncertainty) (Stockholm Resilience Center, 2016), we can begin to characterize Anthropocene Societies that lead to a re-crossing of thresholds back into safer zones. For example, the main proximate drivers of declining biosphere integrity (i.e. biodiversity loss) are land-system change (i.e. habitat destruction) and land development (Platt, 2016), which in turn are directly linked to biogeochemical flows of the nitrogen and phosphorous cycle through agricultural practices, extensive farming, over-fertilization and nutrient runoff. Any conceptualized Anthropocene Society would require that land be used in a way that preserves its integrity for supporting the wide variety of species habitat and is less fertilizer-intensive. Technical changes in agriculture to reduce fertilizer use are presently available, but do not provide the same yields for most food crops without other chemical substitutes or genetic modifications (i.e. genetic modification). The social response would be a shift in the absolute

demand for agriculture (i.e. food), a concurrent shift in patterns of consumption (i.e. moving from meat based to vegetable based diets) and ultimately a drop in overall human population. Additionally, it is possible to reduce habitat destruction through increased reliance on high density living, and linked transport and communication systems.

However, it is also important to assess the ways in which human societies resist such shifts. Moves towards high density development are often eschewed by local groups who favor more scalable living environments, developers who prefer unfettered opportunity for economic development and zoning boards who are conflicted over such competing demands. Shifts in agricultural practices are often met with opposition from farm lobbies that hold particular power within national legislatures. Shifts in dietary preferences are met with opposition from the livestock industry whose economic interests may be threatened and local and regional cultures who have historically enjoyed meat based diets.

Climate change presents a somewhat different consideration, which, as previously mentioned, has direct and indirect effects upon all other planetary boundaries. Climate change is primarily due to the emission of greenhouse gases, which, in turn, are due to energy usage in the current fossil-fuel based economy. A conceptualized Anthropocene Society would require a different carbon emission profile to both reduce our current impact and ameliorate the legacy impact of decades of historic emissions. Beginning with a reduction in such emissions, Anthropocene Society would move towards carbon neutrality and then ultimately become carbon negative if the global mean temperature threshold were to ever be re-crossed.

Technically, it is not yet clear whether a sufficiently large scale energy transition could be generated by a combination of renewables in the next 50 years, even if nuclear power were considered part of the mix. Many activists and countries are opposed to the creation of more

hydro-electric or nuclear power, and the level of investment required to transition out of coal, oil and natural gas based power into more wind, solar, geothermal and bio-materials would be economically challenging without government subsidies and concurrent investments in new distribution and grid systems – especially given the recent hydro-fracking natural gas boom with its associated drop in natural gas prices. Additionally, our energy use profile would be dramatically altered through increased efficiency in automobiles, appliances, buildings and other energy intensive sectors of the economy. In particular, a reduction in greenhouse gas emissions would require a massive restructuring of the automotive sector, transitioning out of gasoline engines and into more use of electrics or fuel cells (which would have to be powered by carbon free sources of grid energy), and eventually evolving into a mobility sector with more ride and car sharing and less automotive assets and infrastructure. Each of these shifts would involve changes in social norms and beliefs (i.e. car ownership as a taken-for-granted aspect of modern life) and large displacements of critical economic sectors (i.e. fossil-fuels) which would resist such efforts through political, economic and technological opposition.

In sum, any conceptualized Anthropocene Society would bundle a set of large scale shifts in energy generation, transmission, distribution, use and mobility as well as land-agriculture-population-food-development preferences into a cohesive and systematic balance with natural systems. These social systems are both the direct cause of our threshold overshoot and a source of inertia in resisting both a recognition of the problem and the development of solutions. We need a new institutional framework for understanding the natural world around us and our role within it. More than looking at the systems that cause the problems, we need to examine how those systems are structured, whose interests they serve, how they yield perceptions of the reality we face and how they can shift to create the potential futures we seek. To structure such an

examination, we turn to institutional theory (Greenwood et al., forthcoming; Thornton et al., 2012; Scott, 2001).

An Institutional Framework for Conceptualizing Anthropocene Societies

The institutional approach is not antithetical to the technocratic approach just described, especially when it considers social factors as being the most proximate drivers of Anthropocene threshold overshoot. Institutional theory begins with the premise that all aspects of the Anthropocene, including the science that has created it, are, to varying degrees, socially constructed (Hoffman and Jennings, 2015). That construction represents a "collective rationality" (DiMaggio and Powell, 1983; Scott and Meyer, 1983), a somewhat coherent pattern of belief and practice (Friedland and Alford, 1991) that is widely taken for granted (i.e. is a type of institution, in this case a "logic"). As such, institutional logics and their manifestations in particular social orders are the basis for whether science and technical measures will be incorporated into society. Some collective rationalities and logics are more amenable to the process and products of science and bio-engineering found in Anthropocene Science than others. Therefore, it is important to understand how logics and particular social orders are constructed and can be changed.

 In this section, we offer a simplified sketch of this construction and change process, one built upon current institutional theory and its variants (see Thornton et al., 2012 for a review). Most notable in our depiction is that the key elements of *institutional order*s – organizational fields, actors, and specific institutions – are discussed along with some of the main *change mechanisms*, which together, link to other natural and social outcomes in the Anthropocene.

The Organizational Field. Strictly speaking, the organizational field is "a community of organizations that partakes of a common meaning system and whose participants interact more

frequently and fatefully with one another than with actors outside the field" (Scott, 1995: 56). It may include constituents such as the government, critical exchange partners, sources of funding, professional and trade associations, special interest groups, and the general public — any constituent which imposes a coercive, normative or cognitive influence on the organization (Scott, 1991). Centered around the physical proximity of actors (Warren, 1967), common industry sectors (i.e. SIC codes) or consequential issues (Hoffman, 1999), fields are richly contextualized relational spaces where multiple and often competing interests involve themselves with other actors who may hold divergent ideas about the nature of the world around them (Wooten and Hoffman, 2008; Emirbayer and Johnson 2008) in an effort to develop collective understandings regarding matters of importance for the collective fields and society.

In short, the field membership defines who has voice in social and public debate. This membership defines the nature of the problems we face within the Anthropocene and the available suite of solutions that can applied to solve them. Not all constituents may realize an impact on the resulting debate, but they are often armed with opposing perspectives rather than common rhetorics. The process resembles an institutional "war" (White, 1992) within "arenas of power relations" (Brint and Karabel, 1991: 355) where multiple field constituents compete over the institutions that define what the Anthropocene means for who we are and who we will become. The dominant views that emerge within the field (and society more broadly) reflect the interests of those who have place, power and status within field level discourse, both to advance or resist change. And throughout our analysis, we recognize that there are multiple possible futures and also multiple possible fields that define them.

Institutions. The systems of beliefs that emerge from within field level debates take the form of institutions that provide stability and collective meaning to social behavior, and are

presented in three domains: the regulative (i.e. regulation), normative (i.e. occupational

standards, educational curricula) and cognitive (i.e. taken for granted cultural rules) (Scott, 1995;

March, 1981; Zucker, 1988). Taken as a whole, the three pillars form a composite set of filters,

what some term logics (Thornton, 2001), through which important issues are perceived and

appropriate actions are developed (Fligstein, 1990). Out of these filters come our ways of

knowing the world around us, which often take the form of rhetorical devices or metaphor

(Rickards, 2015) that help us conceptualize both the nature of the problems we face and the

repertoires of solutions that may be available to us.[1]

As such, our perceptions of the nature of the Anthropocene, its threats and opportunities,

realities and illusions will be filtered through the institutional logics that prevail within the field,

as determined by the collective who possess power to define them. These structures guide us

towards what may be called the "social facts" that organizational actors take into account when

determining appropriate action (Zucker, 1977; Meyer and Rowan, 1983). Once a social fact has

become institutionalized, it takes on a rule-like and taken-for-granted status (Zucker, 1977) that

becomes extremely difficult to break down. This forms a foundation to the resistance we

currently observe to a recognition of the Anthropocene and the opposition to actions to address

it.

Institutional Change Mechanisms. Despite the prior discussion, the organizational field

is often evolving both through the entry or exit of particular organizations or populations

(Barnett & Carroll, 1993) and/or through an alteration of the interaction patterns and power

balances among them (Brint and Karabel, 1991; Greenwood and Hinings, 1996). With an

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[1] Indeed, in some variants of institutional theory (i.e. Thornton et al., 2012), logics, because of their pervasive, deep effects are elevated to a meta-theoretic level and considered the overarching construct that involves all institutional orders and their specific embodiments.

alteration of the field configuration comes an alteration of the corresponding institutions, which are reset at the field and population levels through political negotiation to reflect the interests of the newly formed field (Oliver, 1991).

Entrance to or engagement within the field is often precipitated by disruptive events or "cultural anomalies" (Hoffman and Jennings, 2015) that cause a sharp ending to what had become locked-in by institutional inertia (Thornton et al., 2012; White, 1992). Variously referred to as shocks (Fligstein, 1991), jolts (Meyer, 1982) or discontinuities (Lorange, Scott Morton and Ghoshal, 1986), disruptive events can take the form of hostile takeovers (Davis, 1991), regulatory changes (Edelman, 1992), environmental catastrophes (Hoffman and Ocasio, 2001), rituals (Anand and Watson, 2004), or terrorism (Bail 2012) which create contradictions within the social environment (Seo and Creed, 2002) and force organizations to reanalyze their surroundings. Jointly or singly, they help push us into what Kuhn (1962) refers to as "revolutionary science," a period in which the exploration of alternatives to taken-for-granted assumptions takes place to make sense of the anomalous event. Fields serve as the sites in which organizations come together to do this sense-making work and come to a collective definition or redefinition of social problems and the actors themselves (Pride, 1995).

One critical actor in shaping this field level discourse is the *institutional* or *social entrepreneur* (Jennings et al., 2014; DiMaggio, 1988; Fligstein, 1997; Lawrence, 1999). Fligstein and McAdam (2012) look to fields as spaces of strategic action where socially skilled actors seek to solidify their position by reproducing the status quo or acting as brokers between disjointed groups. Such actors craft strategic responses and tactics that allow them to shape the discourse, norms and structures that guide organizational action and beliefs (Maguire, Hardy and Lawrence, 2004; Oliver, 1991). But these institutional entrepreneurs do not act alone or in isolation.

Individual agents form political networks and coalitions to act as "important motors of institution-building, deinstitutionalization, and re-institutionalization in organizational fields" (Rao, Monin and Durand, 2003: 796). This conception focuses attention on the ability of social movements to give rise to new organizational fields and change the demography of existing fields (Rao, Morrill and Zald, 2000; Davis, McAdam, Scott and Zald, 2005). Organizational change agents became parts of these collective movements, using shared and accumulated resources and power to "overcome historical inertia, undermine the entrenched power structures in the field or triumph over alternative projects of change" (Guillen, 2006: 43) in opposition to others in similarly configured collective movements (Zald and Useem, 1987; Meyer and Staggenborg, 1996).

Thus, events do not, in and of themselves, create social change. They are socially constructed in ways that capture attention and drive both public debate and political action. To precipitate revolutionary change, they require a receptive audience, powerful advocates, and evocative framing that lead to a clear message (Lefsrud and Meyer, 2012; Molotch, 1970). For example, both Hurricane Sandy and Hurricane Katrina were powerful storms that devastated major urban centers in the United States. Sandy gained significant public and political attention to the issue of climate change; Katrina did not. That is because Sandy hit a largely white, affluent population in a city that is central to media and political power. Katrina hit a largely poor, minority population in a city that was politically disconnected from the mainstream media and political establishment. Sandy had a prominent spokesperson in the form of Mayor Michael Bloomberg who named climate change as a primary influence on New York's devastation. Further, the event occurred just before the Presidential election, integrating the issue into the political debate. Katrina had diffused spokespeople to present and frame the events in multiple

ways, mostly as one of government ineptitude (Hoffman and Jennings, 2011).

Conceptualizing Three Archetypical Anthropocene Societies

Using our central concepts and processes for change, we are now in a position to
conceptualize three archetypes (Scott, 2001; Thornton et al., 2012; Weber, 1919) or "ideal types"
(Scott, 2001; Thornton et al., 2012; Weber, 1919) of how institutional orders might manifest
themselves in analytic descriptions of what Anthropocene Society might look like.[2] Each
possible future - Market Means, Technology Fix, and Cultural Enlightenment – is shown in table
1 and presented in increasing order for their impact and ability to address the root causes of the
Anthropocene Era and its implications for the natural environment. Each is also based on what
we see as the current conversation in public and political discourse as well as the research
literature about possible Anthropocene futures. While each type, in some ways, is a more
positive and less dystopian form of society, in the final section of the paper, we will turn to the
direction of change using specific cases, which will allow us to discuss less positive possibilities
in institutional terms.

--- Insert Table 1 about here ---

The Market Means Archetype. In this possible Anthropocene future, economic or
business values predominate. We, as a society, will seek to ameliorate our impact on the
environment for monetary reasons, using measures like Gross Domestic Product and Cost-
Benefit Analysis as a means for determining what actions to take and at what levels. Specifically,

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[2] Archetypes (ideal types) are similar to social orders (Thornton et al., 2012) and also rely on common sets of beliefs
and practice, hence, are akin to logics (Friedland and Alford, 1991). However, as we explain, archetypes are more
specific to the organization and institutions involved in the Anthropocene's operation than are social orders
(Greenwood et al., 2008; Scott, 2001; Thornton et al., 2012). Indeed, given that the natural environment is not yet
recognized in mainstream institutional theory (Greenwood et al., 2008; Scott, 2001; Thornton et al., 2012) (for
exceptions, see Hoffman and Jennings, 2016; Hulme, 2007), we also need to theorize additional social order
elements, which a focus on the Anthropocene helps us to do.

the environment would be viewed an economic asset, valuable for the resources it provides to humankind. Motivations for action would be based on an anthropocentric view of the greatest good for the greatest number (Gladwin et al., 1995; Hulme, 2007). A reduction in manmade contaminants such as greenhouse gases or nitrogen runoff would only be attended to only as they relate to increased market demand, reduced cost of capital, improved operational efficiency or other logics of business strategy. The goals of continuous economic growth would remain sacrosanct with the environment seen as merely an economic input to that continued growth. Impositions that restrict human development would be limited.

At the organizational field level, we would see increased power for multi-national corporations in defining the reality of society's impact on planetary boundaries (Bansal and Clelland, 2004). But we would also begin to see some cleavage between incumbent firms based on old technologies and new entrants based on new technologies (such the fossil-based fuel sector versus the renewable energy sector, or the internal combustion drivetrain versus the electric drivetrain versus the alternative forms of mobility). National and transnational trade agreements would become a critical instrument for normalizing our collective impact based on a continued belief that market success defines society and benefits all. Attendant with this argument is the belief that market success would, eventually, lead to environmental remediation and technologies that impact the environment less or even contribute to environmental benefit (King and Lenox, 2001; Porter and Van der Linde, 1995; Stephen and Paul, 2008). The role of government regulation within this possible future would strike a balance between communitarian and libertarian viewpoints over a trust in the market to yield socially positive outcomes and a need to regulate a market externality on a grand scale.

Attempts to structure global accords in Market Means would be based on a view that we,

as humans, cannot design a structure that will appropriately take us in the proper direction of human social destiny. Trust in the market will be driven by a distrust in a societal structure designed by man which is seen as deriving "from our sense that when order is imposed by human planners, whatever their ends might be, something of great value is lost, something we wish vaguely and inadequately to call freedom" (Vargish, 1980).

As such, there would be greater regionalism and nationalization to fill in the organizational spaces opened by the last twenty-five years of globalization since the fall of the Soviet Union (Ghemawat, 2011). This would put a renewed emphasis on competition and mercantilism, pushing environmental fixes to the more regional level. The influence of transnational organizations for the environment such as the United Nations Environment Program might diminish, but national organizations for market development that articulate market policy, such as the World Trade Organization or the World Bank, might thrive.

In Market Means, the environmental jolts and events that receive attention would not be those of an environmental nature, but would be those around which the economy is impacted: market collapses, commodity crashes, price spikes, and market firm (i.e. bank) failures. Some of these collapses and spike events, undoubtedly would be due to Anthropocene threshold events, such as droughts affecting crops and storms affecting capital assets along vulnerable country coasts. The entrepreneurs who would be more influential in turning attention to these events will be those who can articulate their monetary and strategic importance. Insurance firms and management consultants, in particular, would be concerned with strategic risk and economic cost. Insurance firms have already done more to operationalization storm-related risks than scientists (see Kim et al., 2013). Munich Re reports that worldwide natural catastrophes have both increased and become more erratic in number and costs since 1980, with implications for

coverage of natural catastrophe, business interruption and directors and officer's insurance (Hedde, 2012). Other influential firms would be those with direct economic connections to the environment. Agricultural firms have done far more to think about sustainable practice, ranging from grass-fed beef (Weber et al., 2008) to organic wines (Delmas and Grant, 2014), than many mainstream environmental organizations. Tourism-based cities like Vancouver and Zurich have much stronger prohibitions on pollution and development than other locales.

Concerns from some segments of the market society would lead to a reversal of the trajectory of some aspects of planetary boundaries, but only as measured by specific economic indicators. Many such metrics, such as Gross Domestic Product (GDP), are flawed and do not capture the full scope of environmental impact. For example, GDP measures only the financial transactions for products and services. It does not acknowledge (nor value) a distinction between those transactions that add to the well-being of a society and those that diminish it. Attention would only be directed at efforts for which an economic, or "business case" can be made. The overall import and urgency of Anthropocene issues on a planetary scale would be diminished as merely the same as problems that corporations have faced in the past (Wright and Nyberg, 2015; 2016). Concerns for specific and new science-based actions would be overlooked if they do not have a direct corollary for business logic. As such, Anthropocene Society as Market Means would not result in systematic changes to the underlying value systems that lead to the problems we face. Only when the issues are monetized and framed as risk will they be attended to within market and political institutions (Nyberg and Wright, 2015).

Yet, without Market Means, we cannot expect to lay the foundation for bringing a fully engaged Anthropocene Society into reality. The truth is that, without business, there will be no scalable solutions to averting the continued crossing of planetary boundaries. That doesn't mean

that only business can generate solutions, but rather that the powers of innovation, production, and distribution that business possesses must play an essential role in making the necessary changes in our lifestyles. Business would develop the buildings we live and work in, the clothes we wear, the food we eat, the forms of mobility we employ, and the energy systems that propel them. Indeed, if there were no solutions coming from the market, there would be far fewer solutions. Rather than situating sustainability beside market systems and business operations, we must account for their entwined evolution.

The Technology Fix Archetype. In this possible future, scientific and engineered interventions should lessen our collective impact on the environment and improve the operating conditions in which future society can continue to function. This path promotes deliberate "geo-engineering" forms of manipulation for climatic moderation, sequestration, and amelioration (Crutzen, 2002; Fountain, 2017; Zalasiewicz, 2016) and therefore, requires very little change in our belief structures or behavior because new technology will render the impact of such prior behaviors moot. The prevailing logic is that good science followed by good engineering should be sufficient to address the challenges of the Anthropocene.

The organizational fields in the Technology Fix Archetype would be vertically structured and arranged around science- and engineering-focused bodies and policy groups that define issues and courses of action (Jennings et al., 2011; de Villiers, 2001). Many markets and industries would be organized around exchange, but their exchange would be mediated by how the parties engage with the technical Anthropocene issues. For instance, carbon use firms like power companies would be required to have a mix of renewables, remediation plans, and green carbon taxes embedded in rates. They would also collect information on carbon production and consumption that would be exchanged with scientific bodies for further improving society.

The key institutions in such societies would then become national and international science bodies and closely related science policy arms. In the case of climate change, the Paris Accord working group (UNFCCC, 2015), for instance, would be elevated into a more permanent working body with enforcement powers, and perhaps separated out from the United Nations to act distinctly from the IPCC (Schussler et al. 2014). In the case of biodiversity, new international bodies would be developed to rationalize current approaches to biodiversity and land use, and, as in the case of climate change, have enforcement powers, such as penalties, fines, tariffs, and budgets to help hire local anti-poaching police.

The prompts for action in such a field would be from dash-boarded measures of the Anthropocene, which would be aggregated from local to international levels and readily available and transparent (Stockholm Resilience Center, 2017). In these measures, there would be a reversal of our approach of planetary boundaries but only as measured be specific science based metrics. Problems and solutions would be defined as technical in nature and, as such, can be expected to create unintended consequences that open up a host of problems that had not been foreseen. With each new vista of comes new understanding of the problems we have created and the new solutions they require (Ehrenfeld and Hoffman, 2013). The inevitable technology failures and accidents (Perrow, 2011), like those in CFCs, nuclear power or synthetic pesticides, would give rise to new sets of entrepreneurs who specialize in environmental technology fixes and failures (Maguire and Hardy, 2009). There would also be increasing numbers of social movements around types of technology fixes, such as those we now see with organic versus local versus GMO foods. The form of action and argumentation would be based on scientific findings and the impact of those who have little say in the resultant technology choices: the scientifically disenfranchised.

In a Technology Fix society, there would likely be progress along the Anthropocene dimensions of planetary boundaries with more focused attention on their root technical, but not social causes. Attention would begin in a logical fashion, moving from the most critical being addressed first, down to the least, until they were sequentially moved to safer zones. But progress will only be possible to the extent that technology can solve the problem. By only speaking in terms of the problems to be solved, we may lose sight of creating a positive vision of the future for the humans and other life forms that inhabit it (Ehrenfeld and Hoffman, 2013). Core issues like consumption levels, population growth, or income inequality would not go unchecked. There would also be a clearer focus on risk and robustness, but it seems unlikely that the society would continue to improve beyond defined acceptable risk in each domain.

The Cultural Enlightenment Archetype. In this possible future, there would be a cultural transition of perspective akin to the Enlightenment of the 17th and 18th centuries (Hoffman and Jennings, 2011). The Enlightenment was built on a shift from perceiving nature as subsuming the human endeavor, to one in which humankind embarked on the "conquest of nature" and a metaphor of the planet as an enemy to be subdued (Mirzoeff, 2014). But the Anthropocene Era is an acknowledgement that the scientific method that was essential to the Enlightenment is no longer fully adequate to understand the natural world and our impact upon it.

The Cultural Enlightenment archetype is predicated on the idea that the market and technology are merely the proximate cause of our dominating influence on the environment. Ultimately it is our social beliefs and values that define their purpose, role, form and impact. This path emphasizes that changes in social structures are required to lead to a better human future through better governance (Biermann et al., 2010; 2012), values and beliefs (Alcaraz et

al., 2016) and a variety of societal institutions (Hoffman and Jennings, 2015; Hulme, 2009). The exact form of this variant of Anthropocene Society is more winding and its directions are more difficult to anticipate, but it emphasizes the premise that good Anthropocene science is insufficient without changes to societal beliefs and practice that allow for that science to be recognized.

Anthropocene Society as Cultural Enlightenment acknowledges that humans, as a species, have grown to such numbers and our technology to such power that we can alter global ecosystems. This acknowledgement would include a series of related and deep cultural shifts in the ways we view ourselves, each other, the environment and our place within it. Acting on these shifts would require unprecedented levels of global cooperation based on a new sense of global ethics around collective responsibility and social equity. The kind of cooperation necessary to solve this problem would go far beyond anything that we, as a species, have ever accomplished before. International treaties to ban land mines or eliminate ozone-depleting substances pale in comparison.

The organizational fields might be even more vertically structured than in the Technology Fix archetype; there would be a more hierarchical arrangement among organizational groups, with science education, ethical action, religion and community responsibility organizations at the apex (Karlsson, 2013). Much more basic science and deeper educational approaches would be a foundation of the field, rather than economic growth, environmental engineering and technocratic training. Organizations within the fields would embrace collective social responsibility and community well-being as a primary mission, with market operations and technology fixes viewed as means to that end.

The institutions that would arise in such fields would be based on some mix of education,

science, community, and even religion; but their exact form is less clear than in the other two possible futures. For example, in his encyclical letter *Laudato Si*, Pope Francis (2015) called for the promotion of "a new way of thinking about human beings, life, society and our relationship with nature…Given the complexity of the ecological crisis and its multiple causes, we need to realize that the solutions will not emerge from just one way of interpreting and transforming reality…If we are truly concerned to develop an ecology capable of remedying the damage we have done, no branch of the sciences and no form of wisdom can be left out, and that includes religion and the language particular to it." While the statement within the Pope's message was endorsed by leaders of the Jewish, Hindu and Muslim faiths, one could imagine a continuation of this logic towards a Church of the Earth (Karios, 2017). Quaker or Hutterite organizations might be elevated as recognized, exemplary institutions. One might also imagine that some nations, like Costa Rica and Canada, which have in recent years endeavored to achieve Net Zero carbon emissions, would be extolled and mimicked by other nations.

The main entrepreneurs for setting up these new Anthropocene institutions and practices would be focused on behavioral education techniques, value appeals and regional policy implementation. They would likely lead somewhat vociferous social movements, which would vie with those advocating for more individual freedom (i.e. libertarian groups). In the process, capitalism would be transformed and new forms of "market" exchange would be developed that involve broad scale systemic change; much of which is already being explored in terms of achieving carbon neutrality within societies and market systems, or even becoming carbon negative in ways that far beyond (more) electric cars, LED lightbulbs, and green buildings to address the root cause of our Anthropocene problems (Ehrenfeld and Hoffman, 2013; Schnaiberg and Gould, 2000).

In the Cultural Enlightenment archetype, the trajectory of our approach to planetary boundaries would be addressed and reversed at a more foundational level than in Market Rule or Technology Fix, but not in such a systematic rationalized fashion. It is an approach that moves well beyond the goals of the Brundtland Commission definition of sustainable development that continues on the same path of economic development and approaches. Instead it moves towards what Ehrenfeld refers to as *Flourishing*, "meaning not only to grow, but to grow well, to prosper, to thrive, to live to the fullest. It is a dynamic word, representing change and striving, not the static sentiment that is projected by the word sustainable, but a constant reaching for what it truly means to be a human being living in an interconnected and complex world. It is a future built not just on technological and material development, but also on cultural, psychological, and spiritual growth" (Ehrenfeld, 2009). Interestingly, given the normative nature of this archetypal Anthropocene future, those experiencing Cultural Enlightenment might perceive many events as unacceptable and over the threshold as the boundaries would be continually debated and redefined to reflect a less instrumental determination. It would not be until remediation was done even in the safe zone to approximate (or improve upon) original ecosystem operation that society might find practice acceptable.

The Directions of Change

Each of these archetypal Anthropocene futures – Market Means, Technology Fix, and Cultural Enlightenment – represents a distinct social order, one based on fields, institutions, and institutional change mechanisms. The presentation of the social orders, of course, begs the question "toward what archetype are we currently headed?" Embedded in our current Anthropocene Societies, as in any specific society (Thornton et al., 2012), are different mixes of

these archetypes. Below, we consider two that are evident to us and, as such, represent near-term scenarios: Deepening Contestation versus Challenge-Driven Change. As shown in Table 2, these futures are built on the archetypes and rely on the institutional components and change mechanisms discussed above. Each has near-term consequences for nature in the Anthropocene Era.

--- Insert Table 2 about here ---

Deepening Contestation. One prominent short-term scenario is that we will have a deepening of contestation. In this scenario, all three archetypes are at work, but they are polarized such that, on the whole, a weak variant of Market Means dominates the Technology Fix and Cultural Enlightenment archetypes. Incumbent economic interests are threatened by any acknowledgement of the Anthropocene Era and mount an organized resistance to its reality or human causes.

This scenario is vividly observed in the currently polarized debate over climate change, one of the planetary boundaries of the Anthropocene (Hoffman, 2015, 2011; Lefsrud and Meyer, 2012). Ultimately, "science seems to deliver knowledge (at least in this context) with ever less certainty or authority" (Hulme, 2012) and policy-making has become unable to deliver systemic solutions that upset the status quo. In this scenario, the continued calls for action from the science community are dwarfed by the cultural realities of the political decision-making process. More than the expansion of scientific research and knowledge, the challenge is one of communicating that knowledge in a way that compels people to look beyond their immediate financial and material interests and towards concerns for stability in the collective environment upon which we all depend (Hoffman, 2015). It requires directed and concerted attention to issues of "space, time, knowledge, politics, social action, and, perhaps most of all, interactions between

human and environmental systems, including the empirical and ontological blurring of these categories" (Cook, Rickards and Rutherfurd, 2015: 231).

In Deepening Contestation, the organizational field surrounding the issue of climate change has become balkanized at the national and international levels, where the most powerful drivers of contestation and resistance come from two sets of powerful players. The first is the market and those whose interests may be threatened by any efforts to address the issue. More specifically, 63 percent of cumulative worldwide historic emissions of industrial carbon dioxide and methane between 1751 and 2010 can be traced to just 90 entities, all but 7 of which are leading producers of coal, oil, or natural gas. 50 are investor-owned (such as Chevron, ExxonMobil, BP and Shell), 31 are state owned (such as Gazprom, Pemex and PetroChina), and 9 are nation-states (mostly coal producers in countries such as China, the former Soviet Union, North Korea and Poland). The remaining 7 are cement manufacturers (Heede, 2014).

The second powerful force for continued contestation within the organizational field is the constellation of ideological think tanks and advocacy groups that support free trade and reduced government regulation, such as the Heartland Institute, Americans for Tax Reform, Cornwall Alliance for the Stewardship of Creation, George C. Marshall Institute, and the Science and Public Policy Institute. By one study (Brulle, 2014), 91 organizations making up this "climate change counter movement" were primarily responsible for opposition to climate policy.

These communities of resistance to climate change translates into fractious public discourse; roughly 64 percent of Americans believe that climate change is real, with sharp divides along party lines – 50 percent of Republicans belief that "global warming evidence is solid" compared to 88 percent of Democrats (Pew Research Center, 2014). This contrasts data on the global scale, in which one study found that majorities in 40 nations polled say climate

change is a serious problem, and a global median of 54% believe it is a very serious problem (Wike, 2016). Most people in these countries believe that rich nations should do more than developing nations to address climate change; a sentiment that leads to international debate over the distribution norms for allocating responsibility for addressing the issue. As populism rises around the globe, this may lead to increased international balkanization.

The dominant frame for those who deny that climate change science is real fear negative economic ramifications if action is taken. Many see greenhouse gas emissions as a necessary (though unfortunate) by-product of the development imperative. Some protean transnational environmental institutions may continue to develop in this short-term scenario (most notably the Paris Climate Accord) but their future is not certain. More institutional activity is rising within local structures, particularly at the state and city levels, often with the support of regional market organizations and improving technology.

Events in the short term are framed as sources of conflict with competing views on their reality and sources. Many pro- and con- groups debate the reality of these events, dismissing them as natural cycles or uncontrollable trends, which will only worsen. That said, the field level debates around the individual boundaries of the Anthropocene are disparate and involving distinct sets of actors. For example, where the organizational field around climate change is somewhat more organized even at a transnational level (see Schussler et al., 2014 for a review), the field around biodiversity involves regional biodiversity programs (i.e. Costa Rica's Monteverde Institute), and groups promoting the protection of particular species (i.e. tigers, giraffes, frogs, and so on). Arrayed against these groups tend to be land development interests, (i.e. local governments, mining or forestry corporations, and community elites). The battle around species and land protection seems to replay in each place, with only very slow collective

progress and organization of the field at a higher level (see Whiteman et al., 2012). As a result, change will be sporadic and disparate.

Challenge- Driven Change. A somewhat different near-term scenario is Challenge-Driven Change. Within various organizational fields, individual actors accept the grand challenge of the Anthropocene and break from established balkanized positions, pressing change from within their own field level communities, leading to more vertically arranged fields around science education and community responsibility with new economic markets as primary fields. These constituents can be seen representing each of the three possible futures we describe.

From the Market Means archetype, major multi-national executives in the 2014 meeting in Davos warned of the physical impacts of climate change as a business risk in the form of lost resources (such as water and agricultural products), disrupted supply chains (due to extreme weather) and other material issues (Davenport, 2014). Surveys show that 85 percent of business executives believe that climate change is real (Kiron et al, 2013), which is well above the national average of 64 percent, and more than 90 percent of CEOs believe that sustainability in general is important to a company's profits (Lacy et al., 2010). Many of these CEOs represent companies that are part of the new economy that is displacing the incumbents. To get a sense of the shifting economic landscape, jobs in the clean energy sector exceeded those in oil drilling for the first time in 2016 and continue to grow (Hirtenstein, 2016).

From the Technology Fix archetype, we can see the price of renewable energy (most notably wind and solar) dropping rapidly, making shifts possible that do not require major behavioral change. Google, for example, plans to run all of its data centers entirely from renewable energy by 2017 (Hardy, 2016). In fact, we may begin to see Technology Fix overtaking Market Means as technological advancement (i.e. the price of wind and solar energy)

makes it impossible to remain fixed to incumbent industries and economies centered on fossil-fuel energy. This will change the structure of international positioning on these issues, and reduce the strains of balkanization as countries like China, Germany, Costa Rica and Canada offer blueprints for a strong future by embracing Anthropocene Society.

And from the Cultural Enlightenment archetype, we can see a variety of "climate brokers" (Hoffman, 2015) presenting new and different frames for educating their specific publics on the realities of the Anthropocene; the CNA Military Advisory Board (2014), a group of retired military officers referred to climate change as a "threat multiplier," a "catalyst for conflict" and invoked a national-security frame; The Lancet Commissions, pronounced climate change as a health issue and "the biggest global threat of the 21st century" (Costello et al, 2009); US Energy Secretary Steven Chu, referred to advances in renewable-energy technology in China as America's "Sputnik moment," and climate change as a common threat to economic competitiveness; Pope Francis (2015), with his Encyclical Letter *Laudato Si* reframed climate change as a moral issue and questioned millennia of interpretations of the Bible's Genesis mandate. Each of these brokers carries an authority with specific constituencies who are open to hearing their message. This constituent messaging creates support for stronger transnational normative environmental institutions while also increasing activity at regional fields with increased grounding in markets, technology, and culture.

Events in this near-term scenario may become decreasingly contested as the power balance among competing constituencies shifts towards a gradual acceptance of the Anthropocene Era. In terms of social movement dynamics, the opposition may decrease in power and influence while supporting views grow in number and relevance for future market and technological realities. A few very recognized entrepreneurs and key social movements,

especially around education and specific market operations and technological fixes may make acceptance of the Anthropocene less objectionable. This will slow the level of Anthropocene degradation, with some actual improvement in a few dimensions – most notably energy production and mobility.

Conclusion

Our goal in this paper has been to review and apply social science research to conceptualize how an emergent Anthropocene Society might materialize and the institutional mechanisms that may explain the process. In doing so, we hope to enhance our understanding of where we are going as a species, while also making an intellectual contribution to understanding this grand challenge. We argued that institutional theory (DiMaggio and Powell, 1991; Scott, 2001; Thornton et al., 2012) offers a useful framework to add to current physical and social science models of the relationship of Anthropocene's natural world to its social one; what we refer to as Anthropocene Society. Institutional theory's fundamental premise that reality is socially constructed and deeply grounded in culture helps explain the observed difficulty of change; yet institutional research has also focused on a number of change mechanisms that give some hope of improvement.

We discussed three archetypes (institutional orders) that might be envisioned in the future in the Anthropocene, at least as discussed in current research and conversation (i.e. Ehrenfeld and Hoffman, 2013; Karlsson, 2013; Nyberg et al., 2014): Market Means, Technology Fix and Cultural Enlightenment. By adding in institutional change mechanisms with the descriptive components of these social orders, we were able to identify some means for change. In the near term, we presented how these archetypes and means for change might be arrayed into two very

different scenarios of possibilities: Deepening Contestation versus Challenge-Driven Change. Which will be embraced depends on how informational analysis is carried out and which mechanisms are used by actors in power.

Contributions. Our exposition on institutional theory and its application to the Anthropocene, as we have noted at various points, seeks to make two contributions. First, we hope that it offers a useful, simplified synthesis of current institutional readings of the interaction of the social and natural world. As part of that synthesis, we have used the notion of archetypal (ideal type) social orders (Thornton et al, 2012; Weber, 1919), along with the standard models of institutional levels and mechanisms (Greenwood et al., 2008; Scott, 2001), with some emphasis on agency (DiMaggio and Powell, 1991; Hardy and Maguire, 2013). We have tried to demonstrate that this simplified synthesis allows for a useful reading of the current institutional reality in which we are feel mired where improving the environment is concerned. It also provides for some clear ways to organize conceptualized changes to that environment (i.e. the three main archetypes we presented in Table 1). While consistent with conversations in the field of organization and the natural environment (i.e. Georg and Hoffman, 2013; Hoffman and Ehrenfeld, 2013; Karlsson, 2013; Bansal and Hoffman, 2012), they are new ways of seeing social orders for institutional researchers. Indeed, while the environmental dimension of social orders (logics) have been theorized in various institutional studies (i.e. Hoffman, 1991; Hulme, 2009), it has not been systematically theorized using the same components and mechanisms applied in other generic institutional dimensions, such as markets, communities, and the State.

Second, this work is in keeping with moves to make theory and research more applied and normative. By discussing such aims and moments of doing so explicitly, we have theorized the various institutional dimensions of Anthropocene Society, and made sure, as part of that, to

discuss the normative pillar and its tight intermixing with the cognitive and regulative. In addition, we have presented institutional cases that touch upon provocative issues (i.e. climate change, species loss, DDT, and nuclear disasters) and acknowledged the various, often polarized positions, on such cases. We believe that one fruitful near-term avenue for research would be to recast current studies of institutions and the natural environment, particularly key cases, in terms of whether and how they are moving us forward towards the different archetypes, or perhaps just keeping us mired in a current state of contestation.

Implications for Practice. How might we realize a more optimistic, rather than more pessimistic, future scenario? Each of the three possible archetypes and the two near-term scenarios have implicit and explicit institutional change mechanisms built-in, mechanisms which tell us how to get there from here. Implicitly, each is based on the politics of organizational fields, especially the interests and actions of institutions and, explicitly, each is based on institutional responses to disruptive events, institutional entrepreneurship and social movements.

As such, we are reminded that social change is not always linear; it often moves through periods of rapid change (Kuhn, 1962) or punctuated equilibrium (Romanelli and Tushman, 1994). Consider the rapid social change that followed the terrorist attacks of September 11, 2001. With the passage of the Patriot Act and new travel restrictions set by the Transportation Security Agency and the Department of Homeland Security (two agencies that did not exist before 9/11), social norms around privacy, freedom and government control changed in ways that people would never have considered possible on September 10.

The shifting beliefs around environmentalism that we employ today have been prodded along by such periods of punctuated equilibrium: Rachel Carson's book *Silent Spring* in 1962 (Carson, 1962), the Santa Barbara oil spill in 1969 (Molotch, 1970), and the Cuyahoga River

Fire in 1969 challenged pre-existing beliefs about pollution and ushered in the modern

environmental movement of the 1970s. The Bhopal Disaster of 1984, the discovery of the Arctic

ozone hole in 1985, the Chernobyl nuclear disaster in 1986, and the *Exxon Valdez* oil spill in

1990 elevated pollution concerns to a new level and brought environmental issues into the

mainstream of business in the 1990s (Hoffman, 2001). These anomalous events challenged

existing norms and created conditions under which society and the political landscape was most

amenable to change. The key is that institutional entrepreneurs had a hand in framing them

towards a particular end (Hoffman and Ocasio, 2001).

Over the longer-term, the trajectory of Anthropocene Society that we presented may

undergo similar punctuated change to speed the process of bringing considerations for

sustainability into a new orientation, one that requires, not an adjustment of social systems to the

limits set by the biosphere, but recognition of the planetary boundaries beyond which social

systems should not go but already have. We will eventually accept that we now have control

over the biosphere and therefore, the human systems which depend on it, in ways that are

monumental, leading to new forms of moral reasoning (Ellis and Trachtenberg, 2013). New calls

for planetary stewardship will require a reassessment of our normative systems in view of human

impacts on the Earth System as well as a repositioning of traditional issues concerning fairness

and environmental ethics, not only in one context, but in the connection of multiple social worlds

that leads to "a shared view of human and Earth histories and calls for a renewed engagement

with ethics" (Schmidt, Brown and Orr, 2016)

Limitations. Some noticeable limitations, of course, exist in our work. We acknowledge

that our approach to assessing Anthropocene Society using institutional theory has been rather

instrumental. In spite of our aforementioned contributions, our synthesis has relied heavily on

extant institutional frames (i.e. Scott, 2001; Thornton et al., 2012) and on examples as they relate to environmental research (see Bansal and Hoffman, 2014 for a summary). In order to accomplish our goal of applying institutional theory to the Anthropocene to imagine new Anthropocene futures, we have not been able to work through the different variants systematically, as in a pure theory article, in order to build our three archetypes. Nor have we been able to look empirically at each archetype and their current expression by drawing on new data. Instead, we have assembled data (often researched cases) that have illustrated our points. As such, we have offered a synthetic research article and commentary, but not a theory or empirical piece per se. Still, in light of the size of the challenge of the Anthropocene and the lack of research around the conceptualization of Anthropocene Society, we hope that our synthetic, big-picture approach will be appreciated, and that other researchers will take up the call for more focused institutional research studies on the archetypes and change mechanisms.

In addition, our article is limited by our own viewpoints and stock of knowledge of the field. While each of us has been researching the natural environment from the institutional angle for decades, we have not spent as much time incorporating more micro (Suddaby et al., 2011) and processual (Garud and Gehman, 2012; Whittington, 2006) models of institutional theory and change. These are valuable and not deliberately avoided. Indeed, some of our cases, such as Lefsrud and Meyer (2012) and Schussler et al. (2013) draw upon them. We encourage others taking up the institutional approach to be more explicitly multi-level and processual than we have been able to be. In addition, by focusing on our particular institutional view, we have not looked at alternative explanations for institutional arrangements and change. One might be the systems theory perspective (Sterman, 2012), which examines economic and natural ecosystems (Adner and Kapoor, 2010), policy (MacKenzie, 2010; Callon, 2010), and dynamic feedback for

change (Senge, 2006). In the near future, we plan a longer exposition on institutional theory and such alternatives, and we think that other researchers will see the merit in wrestling with more than one perspective in order to understand the emergent form of Anthropocene Society.

Finally, given that we retrofit many institutional analyses which tend to be relatively materialist in form (DiMaggio, 1995) to discuss Anthropocene Society, we might be accused of being rather cold and overly analytic for studying an issue that threatens to irreparably damage our physical and social worlds. We concur, acknowledging that the reality of the Anthropocene is highly emotive in nature and that the grand challenge is an overwhelming burden at many levels of social life. Indeed, further research and theorizing requires far more collaboration between the natural, social and human sciences (Holm, et al, 2012). "Without truly collaborative and integrative research, many of the critical exchanges around the concept are likely to perpetuate fragmented research agendas and to reinforce disciplinary boundaries" (Brondizio, et al., 2015).

In the end, what we hope to have contributed in this work is twofold: a framework for conceptualizing the future of society within the era of the Anthropocene and an analysis that brings the natural world more centrally into our institutional analyses. In our effort, we wrestle with Rowan's pointed statement that opened this paper. "The Anthropocene is not a problem for which there can be a solution" (Rowan, 2014: 9). Like its constitutive elements – most notably climate change – human responses to the Anthropocene must, by their very nature, involve a shift in our social, political and economic institutions. Environmental problems can no longer be viewed as something outside ourselves and "over there" to be handled by "someone else." Instead, they are intimately tied to the nature of our existence. As Evernden wrote, "The [environmental] crisis is not simply something we can examine and resolve. We *are* the

environmental crisis. The crisis is a visible manifestation of our very being, like territory revealing the self at its center. The environmental crisis is inherent in everything we believe and do; it is inherent in the context of our lives" (Evernden, 1985: 128). Whether we acknowledge the reality of the Anthropocene or not, our institutional realities will shift. Our only hope is that we respond in a way that accurately addresses our responsibilities and takes thoughtful control of the form of those shifts.

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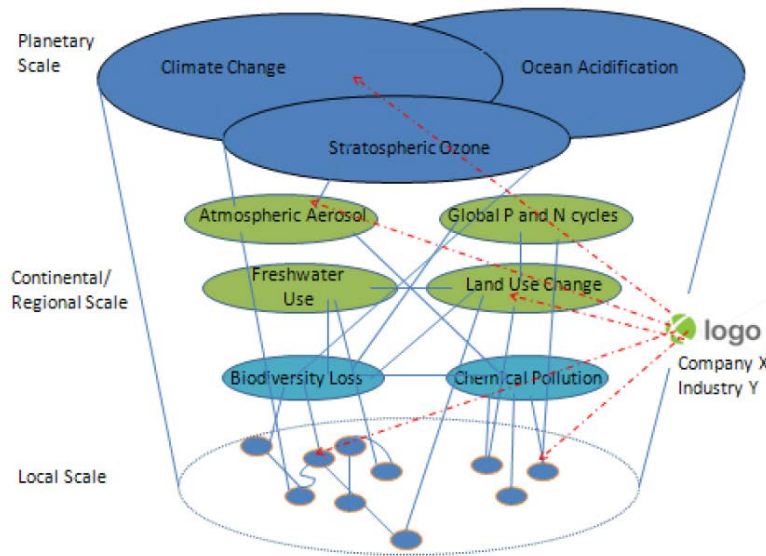
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Figure 1: The Planetary Boundaries of the Anthropocene
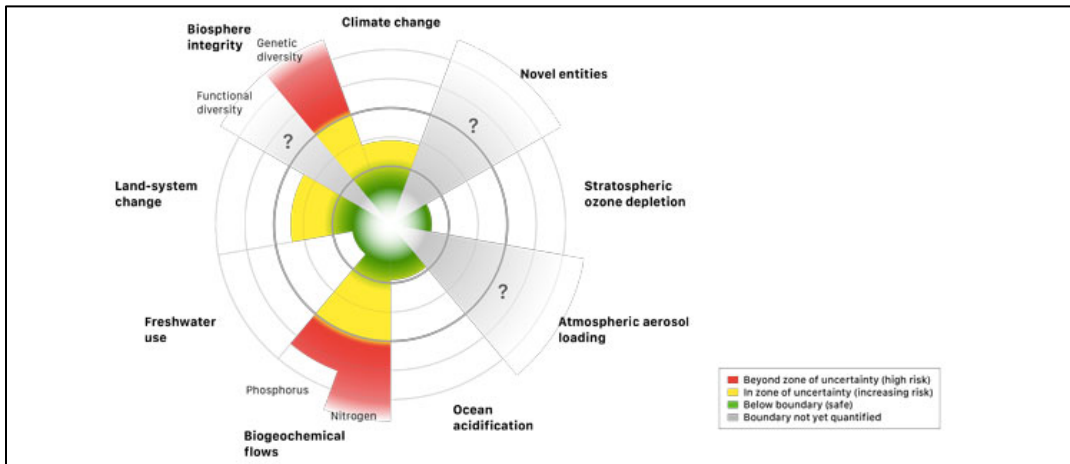
Source: The Stockholm Resilience Center, 2016

Figure 2: Whiteman et. al.'s Firm Level Effects on Planetary Boundaries

Table 1: Three Archetypes for Anthropocene Societies

Institutional Elements	Archetype		
	Market Means	**Technology Fix**	**Cultural Enlightenment**
Organizational Fields	All fields market-oriented, often divided by new vs. old economy.	Vertically arranged around science and engineering-focused bodies and policy groups.	Hierarchical field around science education, ethical action, religion and community responsibility.
Institutions	Strong new national and transnational trade institutions that link market success to environmental remediation and adaptation.	Acceptance of science; new transnational science bodies with enforcement power, embracement of active geo-engineering role.	Powerful new local, national and transnational norms for behavior; recognized national and international sources/ outlets for Anthropocene information
Disruptive Events	Events are framed as market issues based on economic implications, such as commodity use, energy prices and production yield.	Events are framed as technical problems requiring technological solutions. Behavioral sources and responses are often overlooked.	Events are framed as social failures, requiring a reassessment of the disconnect between our historic norms of action and emergent values around environmental stewardship. Human impacts perceived as increasing due to moving bar and normative perspective.
Institutional Entrepreneurs	Market entrepreneurs who embrace environmental entrepreneurship.	Science-based entrepreneurs, and engineering-based social movements.	Education, social and policy entrepreneurs leading to strong social movements.
Anthropocene Dimensional Changes	Reversed trajectory of specific aspects of planetary boundaries as measured by economic indicators (i.e. GDP). Broader reversals where no economic, or "business case" is viable will be overlooked.	Reversed trajectory of specific aspects of planetary boundaries as measured by science-based indicators (i.e. atmospheric greenhouse gas concentrations).	Progress in most dimensions, ordered normatively, with remediation in safe zone dimensions

Table 2: Two Near-Term Scenarios for Anthropocene Society

Institutional Elements	Near Term Scenarios	
	Deepening Contestation (MM vs. TF vs. CE)	**Challenge-Driven Change (TF + CE > MM)**
Organizational Fields	Balkanized (fragmented and politicized) at the international and national levels, with markets as primary fields.	Individual organizations take up the challenge of change and break from the balkanized positions of Continuance and Contest and press change from within their field level communities, leading to more vertically arranged field around science education and community responsibility, with new economic markets as primary fields
Institutions	Some protean transnational environmental institutions, with many more local structures rising with market organizations and technologies ascending.	Some strong transnational normative environmental institutions with the support of former oppositional constituencies, with increased regional fields, grounded on technology and culture, with new markets elevated.
Disruptive Events	Events are framed as sources of conflict with competing views on their reality and sources.	Events become less contested as the power balance among competing constituencies shifts towards accepting them as wicked problems and part of grand challenge of the Anthropocene.
Institutional Entrepreneurs	Many pro- and anti-groups, with weak social movements.	A few very recognized entrepreneurs and key social movements, especially around education and specific market and technological fixes, which make acceptance of the Anthropocene less objectionable.
Anthropocene Dimensional Changes	Slow, continued degradation in all dimensions, with only intermittent leveling.	Slowed degradation, with some actual improvement in a few dimensions.