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Institutional Theory and the Natural Environment: Building Research through Tensions and Paradoxes

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"Why should we tolerate a diet of weak poisons, a home in insipid surroundings, a circle of acquaintances who are not quite our enemies, the noise of motors with just enough relief to prevent insanity? Who would want to live in a world which is just not quite fatal?"

— Rachel Carson (1962), *Silent Spring*

The focus of institutional theory is directed towards an understanding of situations such as those depicted in Rachel Carson's quote above – situations where context is strong and binding, yet subtly experienced; where agency is often diffuse, embodied in an arrangement or system of actors rather than in an individual; and where action and inaction both matter, if in often unpredictable ways. One area in which these phenomena are notably pronounced is research in the area of the interaction between institutional systems and the workings of the natural environment; the ways in which human societies both understand their interface with that environment, and the ways in which the actions of one impact the other. In this chapter, we offer an overview of that domain of research, tracing the evolution of efforts at combining the two since its beginnings in the early 1990s, when the Greening of Industry Network initiated its environmental management research collection (1989), the Organizations and the Natural Environment special interest group of the Academy of Management was formed (1994), and the seminal Special Issue on environmental management was published in the *Academy of Management Review* (1995).

As in our other recent work (Hoffman and Jennings, 2011; 2012; 2015), we use prior reviews, a literature search, and our knowledge of the field to consider past and current work in Institutional Theory and the Natural Environment (ITNE). In this chapter, we structure that inquiry around the notion that fruitful research has come from tensions – indeed, at times,

paradoxes - that exist from trying to combine institutional theory with natural environment studies. Below we discuss the tensions and paradoxes inherent in ITNE work and then examine how that work has been propelled forward by these tensions; all at the ontological, epistemological, and normative levels. With that as a basis for examining past and present studies, we then turn to a new future challenge for ITNE: combining institutional complexity research with environmental and geophysical studies in the era of the Anthropocene.

Tensions and Paradoxes within Institutional Theories and Natural Environment Studies

Mixing institutional theory with natural environment studies leads to both tensions and paradoxes at the level of both grand and mid-range theory development. At the grand theory level, debate and tension allow for multiple theoretical approaches to develop, while avoiding the hegemony by any particular perspective (van Maanen, 1995). Vigorous debate among multiple approaches clarifies paradigms and exposes possible new combinations among them (Westwood and Clegg, 2009). At the mid-range level, debate about concepts and their relations is fundamental to better model building, and that debate can be enhanced by having to wrestle with multiple inconsistencies (Whetten, 1989).

This debate can vary in the extent to which it poses more or less fundamental questions and concerns. Less fundamental debate centers on issues in which two grand or mid-range theories may differ, but this difference does not challenge the premises of either theory. In contrast, more fundamental debate centers on an antimony between two theories because of a paradox generated between them (Smith and Lewis, 2011), where a paradox is "a statement or proposition that, despite sound (or apparently sound) reasoning from acceptable premises, leads to a conclusion that seems senseless, logically unacceptable, or self-contradictory" (Oxford

Advanced Learner Dictionary, 2012).

It is just such tensions and paradoxes that expose issues around what constitutes a field and the nature of agency. More specifically, they expose questions around the degree to which an organizational field will be indexed and aligned with the natural ecosystems in which the organizations are embedded. This is a central element that has animated ITNE studies for decades, if not centuries. In fact, some of the key paradoxes in ITNE stretch back to the *Naturwissenschaften* versus *Geisteswissenschaften* debates of 19th century German philosophy (Ermarth, 1981; Weber, 1919). These debates explored the extent to which humans apprehend the natural environment and generate scientific knowledge. In particular, one issue that has animated this line of inquiry is whether *Verstehen* (putting oneself in the other shoes), which is so fundamental for social science, has any equivalent in the natural sciences. This debate emerges in multiple forms, not least of which was Catton and Dunlap's (1980) New Ecological Paradigm, which called for a shift away from anthropocentric (human-centered) thinking to ecocentric (environment centered) thinking, where humans are one of many species inhabiting the earth and institutional and social development must consider other, non-human, considerations in its trajectory.

With this as a preamble to set the foundations of our inquiry, we proceed by examining more deeply the tensions and paradoxes in ITNE at three levels of theory development: (1) the ontological, (2) the epistemological and (3) the normative. These levels are used often for discussing theory and are readily applicable here.

Tensions at the Ontological Level

Ontology is the study of the nature of being and existence. As such, ontology includes the

fundamental premises about the phenomena that constitute a domain of study, their nature or status of existence, and how they relate to human or other agents.

The ontological focus of institutional theory is about the gradual, widespread acceptance of ideas and practices such that they become taken for granted; i.e., "legitimated" and "institutionalized" (DiMaggio and Powell, 1991; Scott and Meyer, 1994). The process and the outcome of institutionalization depend on social construction. Social construction within institutional theory has its roots in phenomenology (Schutz, 1967) and semiotics (Searle, 1979). The social order that evolves from and supports social construction processes is argued, by some, to be at least moderately functional (Berger and Luckmann, 1966), although social orders are also shaped by the many unintended outcomes of institutional processes (McCarthy and Zald, 1977; Selznick, 1949). As an aside, it is worth noting that Parsons (1937; 1967) offered a much more structural and top-down account of social order, one which was quite functional in nature. Neo-institutional thinkers, for the most part, have not followed this line of thinking.

At the heart of these foundational approaches, is the need for individuals to grapple with the uncertainty of life. Humans must face this uncertainty, but the various ways of doing so can never overcome the felt sense of separation of the self and other and the limited nature of experienced reality. To continue to operate, according to Schutz (1967) and Berger and Luckmann (1966), individuals rely on conventions of understanding of social interaction. These conventions, such as ceremonies and rituals, bring order to the relation of self and other and create some predictability to life.

> "Habitualization carries with it the important psychological gain that choices are narrowed… the background of habitualized activity opens up a foreground for deliberation and innovation [which demand a higher level of attention]… The most important gain is that each [member of society] will be able to predict the other's actions. Concomitantly, the interaction of both becomes predictable…"

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(Berger and Luckman, 1966: 53-57).

In contrast, standard environmental studies approaches (i.e., Odum and Barrett, 2004) portray the natural and human worlds as a set of nested ecosystems, with a variety of niches and carrying capacities for inter-dependent, biological populations. These populations evolve via reproduction, selection and evolution driven by competition and cooperation among members and across populations. The evolutionary processes within ecosystems in mainstream environmental studies are believed to be best theorized using an objective and realist approach – i.e., as "environmental science" (Gladwin, 2012; Meadows et al., 1972).

But some branches of environmental studies have embraced a more subjective and culturally-attuned approach to ecosystem evolution. These branches recognize the extreme difficulty of comprehending the complex systems in a fine-grained, enduring fashion compared to a more holistic, situated one (Bramwell, 1989; Evernden, 1985, 1992). While human ecology and human settlement branches of environmental studies have made progress in convincing other eco-scientists to recognize their claims (Young and Dhanda, 2013), their ideas have not become mainstream nor is human "flourishing" deeply embraced by those advancing ecological sustainability in environmental studies (Ehrenfeld and Hoffman, 2013).

The social view of the natural environment in the two (objective and subjective) theories are fundamentally at odds, with the former externalizing and the latter internalizing it. As a result, the ontological standing, modes of existence and roles of humans within the natural world are quite different in each theory (Hoffman and Jennings, 2015; Jennings and Zandbergen, 1995). On these two deep issues, then, institutional theory and its inquiry of environmental studies exists within a paradox as to the true nature of the linkages between social and environmental systems. Overall, this paradox illuminates tensions that have manifested

themselves around the degree of integration and joint operation of the social and biophysical sphere and around the role of agency in each.

Tensions at the Epistemological Level

Epistemology refers to the methods for studying ontologically designated phenomena; that is, for building up and using knowledge. Even though epistemology is not fully separable, analytically or practically, from ontology, its focus is more on the "how" to conduct intellectual inquiry than around what and why one does so, which is more clearly the ken of ontology. At the epistemological level, one can further observe the tensions and paradoxes that exist between institutional theory and research on the natural environment.

Institutional theory studies the institutionalization process, which occurs through diffusion (creation, theorization, objectification and acceptance) of ideas and practices and is based on gaining and maintaining legitimacy (Greenwood et al., 2002; Powell and DiMaggio, 1991; Scott, 2001). Institutionalization occurs within and across macro and micro levels (Thornton et al., 2012) and the institutional actors, adopted ideas and practices, and social situations which condition one another in ways that are often difficult to disentangle (Lawrence et al., 2011). As a result, the social scientific knowledge generated about institutional dynamics is contextualized in both a temporal and relational sense.

Natural environment studies -- given their belief in nested ecosystems driven by competition and (limited) cooperation among and within populations, according to the constraints of the niches in question -- have devoted significant attention to examining the mechanisms of variation, reproduction, and selection. This is mirrored within studies of the ecology of human systems (Hannan and Freeman, 1977), where commensal mechanisms are also

at play (Astley, 1985). At the same time, environmental and social studies seek to understand the operation of multiple ecosystems and populations at the local, regional, and international levels. Climate change research, for example, has pushed environmental scientists to consider the multiple levels of planetary ecosystems, often via models of particular dimensions, such as weather, biodiversity, or forests. Similarly, social studies of environmental phenomena seek to explore the multi-level relations and interactions among human populations both in identifying environmental issues and developing solutions.

Not surprisingly, in light of its ontology, the epistemology of environmental studies revolves around objectivist techniques to create generalizable, enduring knowledge. The lower the levels of analysis and the more closed the boundaries of the particular ecosystem, the more objective and enduring the knowledge and modeled dynamics are deemed to be. For instance, there are many studies of aquatic environments within lake and stream systems which can be used to generalize to similar ecosystems (Healey, 1999). However, in the case of certain specific species, like salmon, that migrate across ecosystem boundaries, the generalizability and predictability of these models drop off immensely (Healey, 1999).

ITNE, then, has several tensions at the epistemological level, and at least one point of paradox. These tensions arise from the ways in which systematic and multi-level data on both the biosphere and social sphere should be collected and analyzed. Where institutional theory has traditionally focused more on top-down historical studies, environmental studies have been built more by bottom-up and temporally proximate case studies of different ecological units. There is also a tension around how durable the knowledge is from these studies and how literal a translation can be made from one domain to another.

An even more fundamental paradox, however, is around the nature of human action and

meaning and how it should be incorporated into the method and type of knowledge generation in each discipline: institutional theory sees meaning as a central phenomenon to encode and to use as part of its methodology, whereas environmental studies sees meaning as lodged in a different domain from methodology – that of decision making and policy.

Tensions at the Normative Level

The normative level refers to the normative systems and moral precepts of a particular line of theorizing. Theories of both social life and the natural environment each pose moral precepts, either directly or indirectly. Some do so by incorporating within them analyses of normative systems or normative dimensions, as is often the case with social science theories, along with some criteria for evaluating these systems relative to one another (i.e., in terms of richness, diversity, mobility, etc.). Others do so by specifying the operations of systems in which phenomena are embedded, with considerations for the implications in terms of better and worse operations or outcomes (i.e., more diverse and robust ecosystems, more efficient social processes, etc.).

Natural environment studies focus on the evolution of ecosystems as well as the human systems that depend on them, with notions of balance and preservation being key criteria, along with the need for richness and diversity. This balance requires, at the very least, human stewardship (Hawken, 1993). Some have argued that to pursue the difficult task of achieving and maintaining balance, the human stewards themselves require normative or moral systems of beliefs, generally found within the domain of spirituality (Suzuki, 1997). These views about balance and the natural environment are clearly prescriptive in seeking a particular and desirable end.

Institutional theory focuses on the gradual, widespread acceptance of ideas and practices such that they become taken for granted. But institutional theory is fundamentally agnostic about the moral nature of the process and its outcomes. Furthermore, institutional theory typically looks backward and seeks to explain; it does not seek to evaluate and judge the emergence of future outcomes. Nevertheless, the outcomes bear directly on our moral sense of who we are as humans, how we relate to other humans, and how we relate to the natural world. The Pope's encyclical letter *Laudato Si* (Pope Francis, 2015) has opened up this set of issues for conversation in the religious domain. Yet, institutional theory is not prepared nor fully equipped to grapple with them – particularly in any moral or religious sense (Friedland et al, 2014).

So, at the normative level, the tensions between environmental and institutional studies are evident, even though paradox is less so. Both theoretical approaches agree that seeking some types of social orders over others is *not* the primary goal of theory, and each approach is relativistic about how value and action should be judged; i.e., it should be judged from the point of the view of the social order being examined or raising the issue. Yet the two theories are in disagreement about the underlying implications of theory and research for society. The subtext of most environmental studies is that the preservation of nature and the balance between the biosphere and the social sphere is critical for both human society and the natural world; whereas institutional theory is relatively silent about such claims.

How These Tensions Have Influenced ITNE Research

We have argued that ontological, epistemological, and normative tensions and paradoxes animate research on institutional theory and the natural environment (ITNE). Now, we would like to turn our attention to ways in which these tensions and paradoxes enrich and guide that

work. One piece of evidence for this enrichment process is the growth rates in institutional theory and the natural environment (ITNE) research, as depicted by Figure 2 below.[1] We see that research in ITNE began around 1995 and has grown steadily, though remaining fairly flat in the "A" journals. Yet, it is also known that these "A" journal pieces generate high citation counts and stimulate research by the wider community. This wider growth rate is reflected the number of articles on business and the natural environment in a similar time period, shown in Figure 2, (see Hoffman and Georg, 2013 and Hoffman and Bansal, 2012 for reviews).[2]

-- Insert Figures 1 and 2 about Here --

Embedded within these steady growth rates is the driving force of the tensions and paradoxes which have led to some of the distinctive features of ITNE research, even if they have not been resolved. The main tensions are displayed in Table 1 and discussed in detail below, particularly with regards to ITNE theory and empirics, the tensions have helped generate

-- Insert Table 1 about Here --

Research Directions in Response to Ontological Tensions

The ontological tensions in ITNE have manifested themselves around the degree of integration and joint operation of the social and biophysical spheres and around the role of agency in each. This leads to four topical areas where ITNE research is enriched by them: logics, triggers, social movements, and institutional agents.

Logics. Originally, environmental ideas and practices were theorized and investigated as

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[1] The protocol for collecting these articles is available upon request. It uses standard keyword searches in journals around terms, such as "institution*", for institutional theory, and "climate" for environmental studies related to institutions, with intersection of these words in management journals to capture ITNE's growth rate.

[2] The methodologies for generating each graph are different. The protocol for collecting these articles used a proxy of articles cited in the *Oxford Handbook of Business and the Natural Environment* and is not intended to be comprehensive. Therefore a direct comparison of scale along the vertical axis is not accurate for a direct comparison. That said, the trend lines in each graph can be used for comparison.

being part of the rationalization project of modern societies. Like other modern features, such as constitutions and education, ideas such as environmental stewardship and practices like ISO 14001 are part of the rationalization of all areas of human life (Meyer et al., 1997). This has been elaborated and demonstrated in David Frank's work (1997), which shows the adoption of environmental treaties by highly diverse countries based on their linkage to world level bodies. Hironka and Schofer (2002) refined these points in their study of the diffusion of environmental practices in the world system (also see Schofer and Hironaka, 2005). Mimicry (i.e., similar cognitive stances), rather than coercion (force or regulation), in many cases was sufficient for adoption of environmental practices by less centrally linked members in the system.

In the 1990s, ITNE scholars came to view the environment as a unique domain where logics were given *in situ* expression. This expression, in the case of corporate logics became embodied in a series of evolving structures, methodologies and motivational frames around concepts of environmental management, pollution prevention, waste minimization and the like. Hoffman (1999; 2001) documented a progression of logics used in the US chemical industry over a forty year period, from industrial to regulatory to social responsibility to strategic. These environmental logics follow Scott's (1995) theorized transition from regulative to normative to cognitive and back to regulative, starting with the industrial as a cognitive approach in mainstream US manufacturing in the early 1960s. This "three pillar" approach was also influential in the works of Bansal and Clelland (2004) and Bansal (2005), which showed, through qualitative analysis, how different meanings of sustainability evolved, at the cognitive, normative or regulatory levels and how companies use them to influence environmental discourses.

Over the last ten years, however, as in all of institutional theory, ITNE has viewed

environmental ideas and practices in organizations with a wider lens. Instead of focusing on management practices, researchers have considered how environmental processes, thinking, and practice permeate a number of different social orders beyond the corporate. For instance, Weber, Heinze and De Soucey (2008) in their highly regarded study on organic beef examine local alternative methods ("grassfed") meat production, from its inception with rearing practices through to grassfed beef's marketization. The community as a social order was central to defining the alternative, more environmentally friendly logic, even if the market logic was increasingly used as organic beef becomes popular. Similarly, in her study of a natural food store chain, Besharov (2014) has shown the importance of gradually blending (neither completely, nor uniformly) organic and corporate-market principles in the daily operation and roles in the main store. Ansari et al. (2013) examined the emergence from lower level action of an overarching, hybrid "commons logic" at the field level that has enabled a shift in thinking around the tragedy of the commons.

Nevertheless, while ITNE theorists use environmental logics, like institutional scholars more generally, they have stopped short of making environmental logics a generic form of social order (i.e., see Thornton et al., 2012). Environmental logics, instead, are instantiated in different social orders, ranging from the market to the community. On the one hand, this seems eminently sensible, for humans may not live in some ideal type of "environmental social order." Such an order would likely be a combination of other orders in a unique configuration. On the other hand, if the environment as experienced by humans is essential socially constructed, then that social construction might be worth considering as a generic logic (Hoffman and Jennings in their study of logic changes that might be induced by the BP Oil Deepwater Horizon spill (2011) used the work of Hulme (2009) who theorized a more generic environmental logic, one that considers the

deeper assumptions of modern society with the contested elements exposed by this formative event, such as the relations of humans to the environment, the role of knowledge, and the long range goals of society.)

Triggers. The tension between the social and biosphere as depicted in ITNE's ontology has manifested itself in the use of triggers, anomalies, and field-configuring events. As a matter of tradition, many ITNE researchers have used detailed case studies – exposés - of environmental incidents as examples to develop ITNE arguments about how the natural environment affects institutionalized ideas and practice. These include works like Perrow's *Normal Accidents* (1999), Weir's *The Bhopal Syndrome* (1986), and even Weick's work on the Mann Gulch fire (1993). Such incidents, which are grounded in the biosphere, act as "shocks" or "triggers" in the social sphere for institutional change (see Greenwood et al., 2002; 2008).

To this notion of triggers, Hoffman and Ocasio (2001) added considerations for attentional processes. Without key stakeholders recognizing and agreeing that the trigger is worth problematizing and theorizing in some reflexive way, then institutional change will often not be initiated. The assembling of attention may be structured by existing systems, such as found in legal rule systems (Jennings et al., 2002; 2005) or it must be generated via negotiation over its meaning (Hoffman, Riley, Troast and Bazerman, 2002).

Whereas triggers in this earlier line of thinking appear to be more exogenous to institutional systems, the consideration of attention and negotiation begins to make them more endogenous. The recognition and theorization of the triggers require reflexivity, which also requires recursion between the social and biophysical worlds. To understand this reflexive process around biophysical triggers, ITNE researchers have turned to environmental risk, cultural anomalies, and field-configuring event. Environmental risk is very much a function of

the framing of a potential trigger. Framing it in more human versus environmental terms is known to increase its effects (McDaniels et al., 1999; Thaler and Sunstein, 2008). Similarly, cultural anomalies, like the BP Oil Spill (Hoffman and Jennings, 2011), or temperature increase in climate change models (Hoffman, 2015; Lefsrud and Meyer, 2012) require modifying field-level systems and commensuration of biophysical processes. A field level event is likely to be required to make sense of the risk and cultural anomaly posed, partly by adjusting field level systems and measurement, and the attention engendered.

In spite of their importance, however, the impact of natural environment triggers on social change is frequently blunted by attention, interpretation, and attendant action of those in the field (Misutka et al., 2014 for review). This has been the case in the Conference of the Parties (COP) meetings, as studied by Schussler, Rüling and Wittneben (2013) who sought to explore more of the contextual factors that allow events to be catalysts for change. Analyzing how regular and high-stakes events in an event series interacted in producing and preventing institutional change in the transnational climate policy field, they found that growing field complexity and issue multiplication compromise the change potential of a field-configuring event series in favor of field maintenance. Triggers by themselves, therefore, are insufficient for integrating elements of the biosphere with those of the social. In the end, the exploration of an emergent environmental logic has been central to ITNE research and promises to continue to be so.

Stakeholders and Social Movements. ITNE work has drawn on stakeholder and social movement research to help understand the role of agency in institutional changes affecting the environment. The stakeholder research in ITNE studies rests on stakeholder theory as elaborated by Mitchell, Agle and Wood (1997), which sees stakeholders as internal and external groups who

are concerned with some set of issues (such as environmental) to varying degrees, and who have different degrees of legitimacy and power to deal with them. The array of stakeholder groups and their alignment around environmental versus economic issues has been shown to make a difference on activities such as technology choice and the long run returns for firms (Sharma and Henriques, 2005). Stakeholders associated with different types of firms also tend to be associated with different forms of environmental plans and practices (Henriques and Sadorsky, 1996).

Nevertheless, in and of themselves, stakeholders do not serve as a compelling institutional construct. Instead, it is important to understand their mindsets and how they construct interests and issues in order to act (Bansal, 2005). Those mindsets and the practices they entail have been shown to generate different meanings of "sustainability", and those meanings unpin different environmental management schemes (Bansal and Clelland, 2004; Bansal and Roth, 2000).

In parallel with stakeholder theory, ITNE researchers have used social movement studies to offer yet another mechanism for institutional change as it relates to the natural environment, again tying the biophysical and social worlds together, along with human agency and environmental effects. Social movement theory draws on mobilization explanations, where interests and resource availability are concentrated in groups activated by social issues (Davis et al., 2005). Work in sociology on environmental movements, like studies of protests against the Santa Barbara oil spill (Molotch, 1970), have led ITNE researchers to consider movements around recycling (Lounsbury, 2001), alternative power (Russo, 2001; Sine et al., 2005; Sine and Lee, 2009), and climate change policy (McCright and Dunlap, 2003; Schussler et al., 2013). This social movement work pushes agency up a level of analysis from stakeholders and makes agency more enduring across decisions and situations involving that particular environmental cause. In

this way, the natural environment has a broader and more lasting connection to institutional field dynamics.

While ITNE has considered social movements around environmental issues and documented some effect of them, it has yet to consider social movements in the same way as many in environmental studies. In environmental studies, the most fundamental social movement is around the issues of human population growth, migration and expansion (Bramwell, 1989). These migrations and expansions have had a tremendous impact on the natural environment over the centuries, often through habitat and species loss (Diamond, 2005).

Institutional Agents. Stakeholders and social movement members are both types of institutional agents, though the degree of agency and amount of impact may range from diffuse and low to concentrated and high. More recent ITNE research has focused on agents who are more identifiable as a class, more directed in their interest, and have a higher impact. Two types are evident. The first is institutional entrepreneurs. These entrepreneurs, through bricolage that generates new ideas and practice and via negotiation with others – often leveraging social movements to which they belong – change the institutions in the field through directed and concerted action (Maguire and Hardy, 2009). Sometimes, multiple entrepreneurs and rounds of entrepreneurial effort are evident, as in the gradual de-legitimation of DDT's use (Maguire and Hardy, 2009). At other times, particular entrepreneurs are able to generate change relatively rapidly, often by developing not only new institutional artifacts and leveraging movements, but by creating new roles or organizations to aid the legitimation and adoption process.

For example, Bertels, Hoffman and DeJordy (2014) explore the heterogeneous nature of field level membership, developing a method to identify configurations of social position, identity, and work that result in a distinct set of challenger roles. Such has been the case in

recycling, where university groups created formal recycling roles and committees and used the legitimacy of the university, in conjunction with the social movement for recycling, to institutionalize the practices on key campuses, then spread these practices elsewhere (Lounsbury, 2001). Besharov (2014) has gone on to show that by creating "hybrid" roles in an organization (a natural food store) that blend environmental and business concerns, the organization may better adapt to both logics in the surrounding field.

The second type of agent is the advocacy organization. Like institutional entrepreneurs, the advocacy organization represents interests and groups in the field aligned with different institutional logics. Unlike institutional entrepreneurs – even those entrepreneurs with formalized change agent roles - advocacy groups are even more permanent and embedded within a field and reflective of it. For instance, Hoffman and Bertels (2010) mapped out the various networks and clusters of eNGOs in the US over the last 15 years, and showed that four types of advocacy organizations exist, ranging from dark to light green and more versus less aligned with corporate interests. As Hoffman (2011) has gone on to show in the case of climate change, advocacy groups are either believers in or deniers of the phenomenon and line up in politically partisan ways to generate or thwart change. Lefsrud and Meyer (2012) examined the views of geo-scientists employed in different Alberta Oil Sands organizations to see how their professional roles would combine with advocacy pressures. They found a strong association of particular types of training and place of employment with views of climate change, even though all participants were surveyed using the same scenarios and questions about climate change.

It is evident, then, that in both stakeholder and social movement theory, while there is agency, the focus and direction of that agency may positively or negatively affect the natural environment. From an institutional theory point of view, ignoring environmental stakeholder

groups, undermining environmental claims, and denying the science of climate change is just as likely as the reverse. So agency as depicted in ITNE has only partly dealt with the documented negative effects of humans on many ecosystems.

Summary. As a result of wresting with tensions about agency within the social and environmental domains as depicted by ITNE, human agency in diverse forms (via triggers, stakeholders, social movements, and specific institutional agents) has come to be viewed as a central driver in the relation of the social and biosphere order. Indeed, around this point, institutional studies of the natural environment may now have more agreement than tension or paradox, but how that driver operates with regard to the natural environment - and with what inevitable effects - is more debated.

But one issue remains to be addressed. In ITNE today, some degree of fundamentalism or essentialism exists about the role of the natural environment in society. ITNE sees nature as less malleable than other features of the social order, even if the natural environment is socially constructed. But this is problematic, given the scale and nature of the environmental problems being studied. Schussler et al.'s (2014: 142) article on the UN Conference of the Parties Conference on climate change in Copenhagen, for example, comment that: "The field of climate policy is an extreme case of a transnational field, because the need to substantially reduce greenhouse gas emissions … requires that millions of organizations and individuals change their production and consumption patterns, which implies changing an economic system to meet a threat that lies largely in the future."

Research Directions in Response to Epistemological Tensions

Epistemologically, ITNE studies have wrestled with several tensions. These include how

to gather and analyze systematic, multi-level data on both the biosphere and social sphere, transferring and generalizing from models and findings across levels and domains, and incorporating meaning and value ascribed by humans into the methodologies for generating knowledge. The way in which ITNE scholars have handled these tensions can best be seen in how data are encoded and assessed.

Encoding ITNE Phenomena. Originally in institutional models, the natural environment was treated as simply a type of outcome affected by institutional processes. These outcomes were typically at the organizational level. Examples include environmental management practices (Espeland, 1998; Hoffman, 2001) and environmental performance (King and Lenox, 2000). There are face valid, well-understood measures of these phenomena, and these measures had already been tied by other studies to the environment's health. As a result, the outcome variables themselves were not so much the focus as the institutional processes generating them. This is true even in more recent ITNE studies. However, what is also true in these more recent studies is that the meaning of those variables in both social and environmental terms is more evident. For example, alternative power has been studied as a point of contestation in the US energy industry, one that signals the progressiveness of communities and willingness to change on the one hand and an unsightly eyesore and government supported industry on the other (Sine and Lee, 2009; Sine et al., 2005). Indeed, ITNE scholars have begun to consider other textured outcomes, like policy (Marcus et al., 2013) and media opinion (Bansal and Clelland, 2004) in their studies.

The natural environment has also been encoded as an input – an independent variable – for institutional processes and outcomes. The difficulty has been squeezing the somewhat different meaning of environmental factors into institutional ones. As one clever move,

institutionalist relied on the regulatory interface of institutions and the natural environment to generate useful input variable. For example, the natural environment's effects have been captured by environmental infractions (King, Lenox and Terlaak, 2005) and scandals (Perrow, 1999; 2011; Vogel, 2012). These incidents, in turn, lead to compliance on the part of the firm and to repair attempts (Petriglieri, 2015). Now there is more of a move to examine the natural environment inputs as normal operating elements for organizations and industries. For example, firms measure their emissions in carbon cap-and-trade schemes and how their performance and response to emissions controls, in turn, affects the direction of R&D investments (Liesen, 2013).

In addition, the natural environment has been encoded as a context for institutional processes. Originally, the industry or region was used to proxy ecosystems and to simultaneously capture the organizational field, even if this transformation was only partial. One might view Selznick's study of water management in TVA and the Grassroots (1949) as an example. Studies of Responsible Care in the chemical industry (i.e. King and Lenox, 2000) also illustrate the encoding of the natural environment at the industry level through outcome variables (emissions). Increasingly, considerations of various environmental logics and policy regimes are injected into such studies. These period effects condition the relationship of the inputs and outputs, further bridging between environmental and social spheres. Indeed, as part of this contextualization, ITNE research now encodes more variation in practice and idea adoption within firms (i.e., Besharov, 2014 on natural foods) and fields (i.e., Sharifian, 2015 on clean technology use).

Perhaps the most subtle way of encoding and linking natural and social phenomena from an institutional angle is by using discourse. Discourse includes the terms used to refer to aspects of a phenomenon, the process for understanding these terms, and the conventions for using them (Phillips and Hardy, 2002). Discourse in any field, according to institutional theory, is also

embedded in wider, societal level discourse about related phenomena and processes (Lefsrud and Jennings, 2014). Early ITNE studies of discourse examined the corporate/natural environment linkage around terms for environmental practice, such as "waste" (Clark and Jennings, 1997) or "recycling" (Lounsbury, 2001). More recent studies, have considered how these terms are embedded in broader meaning systems, such as that revolving around "sustainability" (Bansal, 2005). Building on Bansal's work, Soderstrom and Weber (2011a; 2011b) are tracing the evolution of sustainability's meaning at the global level, using media outlets and government documents. In another example, Lefsrud and colleagues (2014) focused on how "oil" is encoded and examined how the term has changed over time to influence local regulatory hearings and media perception of oil operations.

While all of these strategies for encoding and linking social and environmental processes help overcome some of the epistemological tensions between institutional and natural environment studies, they still suffer from encoding data from only one or two levels of analysis, by overlooking reciprocal relationships, and from relying on observations over relatively short time periods. Also, in our experience, natural scientists are often uncomfortable with the encoding effort in ITNE, commenting that something essential about ecosystems and processes are lost in translation. These are points to consider when we examine future ITNE work.

Assessing ITNE Phenomena. While encoding institutional and natural environmental observations has seen some unique epistemological moves in ITNE, especially around discourse, assessing the encoded information, for the most part, has relied on extant institutional methodologies, not new ones that wrestle in a deep way with natural environment phenomena. The encoding of the natural environment as independent variables, dependent, contextual and control variables, has led to the use of relatively standard quantitative methods. One type of

model is based on panel analysis (King and Lenox, 2000; Gehman et al., 2012; Russo, 2001). Some models have focused on events (such as incidents, triggers, adoptions, and periods). Thse models move somewhat closer to natural environment phenomena as these incidents or periods are often central to the specification of the model and type of modeling themselves. Such types include event history analyses of adoptions (Frank, 1997; Sine et al., 2005; Hironaka and Schofer, 2002; Jennings et al., 2005; Sine and Lee, 2009) and event history period models (Jennings et al. 2005; Sine and Lee, 2009). Here ITNE researches try to use time frames and distributions of events that capture the impact of human activity on the natural system, such as climate change and treaty adoption in the Frank (1997) study. The recent models by Sine et al. (2005) also are sensitive to spatial contagion (see Strang and Tuma, 1993). These too move in the direction of considering ecosystems, by characterizing political spaces (US states) in both social and environmental terms.

Qualitative analysis in ITNE also originally relied on assessment techniques already extant in the broader institutional literature, then moved to wrestle with the deeper tensions in doing so. The original techniques included content and discourse analysis, historical (longitudinal) case study, and process modeling. The assessment of discourse translates and relates how the natural environment is viewed by different stakeholder groups (Bansal and Roth, 2000), communities (Hoffman and Jennings, 2011; Petriglieri, 2015), and societies in different periods (Djelic and Quack, 2010). Still, the action linked to this discourse and its follow-on effects on the natural environment are often implied (Bansal, 2005; Clark and Jennings, 1997; Soderstrom and Weber, 2011b), but less often examined directly. Now there is an effort to examine how language changes become encoded into regulation (Lefsrud, 2013; Maguire and Hardy, 2009) and policy (Schussler et al., 2014).

Historical case analysis, such as Holm's (1995) study of the Norwegian fishing industry's transformation, blend the natural and social worlds in a more fine-grained fashion. Changes in the natural environment are stimuli for social changes, part of the discussion of change, and influenced as a result of the institutional negotiations and transformations. Process models go further still. For instance, in Zietsma and Lawrence's (2010) study of "The War of the Woods," we see the development of a recursive process model based on historical case and field-configuration observations. This process illustrates how boundary shifting occurs to enfranchise more stakeholders, yet re-stabilizes again after intense periods of contestation. This process, while traced through a fifteen-year period in British Columbia, appears generic enough to transfer to other ITNE fields, especially those where there are battles around natural resources.

Summary. ITNE research, perhaps more than other organization theory approaches, requires consideration of the phenomenon being studied from at least two angles – the institutional and the environmental – choosing the most appropriate level of analysis for the institutional and ecological dynamics, bounding the study using natural systems boundaries, and focusing on face valid outcomes that resonate in both environmental and institutional domains. Given these requirements, it is not surprising that it has been difficult to balance institutional and ecological factors when encoding and assessing ITNE phenomena. For instance, the study of chemical industry self- versus government regulation (King and Lenox, 2001) uses the industry as the organizational field and private firms as actors, with emissions as the main measured outcomes; but the emissions generation process is not part of the study which is based on emissions standards developed in separate environmental studies of local and non-local ecosystem effects. Alternatively, in "Tilting at Windmills," which examines the adoption of renewable wind power across US states, the adoption is about a clear, positively sanctioned,

environmental investment by businesses in each political unit, but an adoption pattern whose environmental impact is not directly examined and whose effect on electrical power usage and greenhouse gas reduction is ambiguous, and, in the short run anyway, likely minimal. We return to this issue of aligning levels, boundaries, specificity of processes, and different types of outcomes when we discuss specific research studies generated around this tension

Current and Research Directions in Response to Normative Tensions

The ITNE research involving normative (moral) tensions wrestles with the contrast between the subtext of most environmental studies and those in institutional theory. The former's subtext revolves around the need to preserve nature and the balance between the biotic and social as critical for society. Institutional theory, in contrast, is typically silent about such issues. As a result, most ITNE research suffers from an imbalance in the normative realm. The subtext in ITNE research tends to collapse into implicit statements about better versus worse natural environment outcomes. Rarely is a better or worse society, which is associated with those outcomes, also examined. Still, we think that there are four areas were the normative implications of outcomes along both environmental and institutional dimensions are considered: the market impact of being "green", positive organization experiments in greening, organizational failures around the environment, and institutional policy efforts to address environmental matters.

Does It Pay to Be Green? This question has been central to much business and environment work, particularly up to 2005 (Hoffman and Georg, 2013). On the surface the question resembles an economics concern, but beneath is the pre-ordained belief of many undertaking the research that the answer would be "yes" (Hart and Ahuja, 1996; Sharma and

Vredenberg, 1998). Institutional theory has not been particularly well-positioned to address the question directly, given that its main concern has traditionally been with legitimacy rather than performance (Scott, 2001). However, the system for building green markets and rewarding green performance is more institutional in nature. Indeed, economists have long recognized the need for such institutional infrastructure for environmental innovation and performance, even if it has been pitched in formal terms; i.e., as sets of legal systems, market rules and associated polices (Porter and van de Linde, 1995). Not surprisingly, some of the institutionalists who have examined the question also emphasized building markets to ensure the value of green products and services (Babiak and Trendafilova, 2011; Jones and Bauxenbaum, 2012).

More recently, institutionalists have considered the beliefs that support different versions of sustainability and how these versions of sustainability frame what it means to "pay"? Bansal's (Bansal and Roth, 2000; Bansal and Clelland, 2004; Bansal, 2005) line of work on the meaning of sustainability documented the importance of different meanings. One popular theme is that of the "triple bottom line," a focus on the economic, social and environmental dimensions of performance, with the economic typically being weighted the most heavily. A host of other broad schemes for assessing green performance also exist, such as ISO 14001, EMAS, the Global Reporting (GRI) Index, and so on. Other schemes are more specific to the industry or community, such as the Sustainable Forestry Initiative, the US Green Building Council or Energy Star. One of the most elaborate systems for assessing green performance has been "The Natural Step" (Karl-Henrik, 1997). It is a sweeping method of evaluating the inputs, throughputs, and outputs of organisms and organizations at the spectrum between the micro and macro levels (i.e., using systems theory). At the organizational level it back-casts from an envisioned sustainable future and then re-orients purchasing, production, and distribution for organizations

to help achieve that vision. Given its requirements for a fundamental mind-shift and building social consensus, the Natural Step is both institutional in nature, and a set of practices that has been commented upon by ITNE researchers (Bradbury and Clair, 1999).

In these broader, more recent schemes, the time horizon for assessing environmental management practice and sustainability as models for institutional change has shifted. A wide variety of scholars have now come to embrace the essence of the Rio definition of sustainability, which involves not compromising the needs of future generations with current practice (see Henderson, Gulati, and Tushman, 2015 for a review). A more positive version of this message has been held out by Ehrenfeld and Hoffman (2013) whereby societies should not just preserve and pursue precautionary principles, but try to *flourish*. Flourishing refers to both material and immaterial existence, where innovative living around sustainable principles improves general well-being.

All in all, in spite of its emphasis on understanding systems and deeper culture in order to capture and improve environmental performance, the ITNE research on this area has greatly emphasized the socially constructed, consensually agreed upon measurements of performance, not wider measures as they exist in natural environment studies. The institutional measures, then, tend to weight the well-being and sustainable development of society instead of the health of extant ecosystems and the rights of their other inhabiting species to sustainable futures.

Experiments. One reading of ITNE research is as a set of investigations in institutional change (Greenwood, Jennings, and Hinings, 2014). From a moral angle, these change efforts look like experiments to improve institutionalized thought or practice, if not necessarily so. The initial experiment to problematize and theorize a new artifact or create a prototypical organization is critical for the institutionalization process (Greenwood et al., 2002; Lawrence et

al., 2002).

In the 1990s and early 2000s period, ITNE related research focused on environmental management practices. The use of ISO 14001 and EMAS (Bansal and Hunter, 2003; Delmas, 2001; 2002; King, Lenox and Terlaak, 2005) represent a shift in systems of operations in firms. The shift still works with standards of technical rationality held by many in firms, just as Total Qaulity Management and other quality-related practices do (Westphal et al., 1997). This makes adoption more palpable for the majority of firms' stakeholders, including representatives from government. These stakeholders in turn, by positively signaling and sanctioning the practices, help diffuse the experiment.

Observation of more extreme experiments by researchers, such as of Patagonia's efforts to re-design its products and to re-socialize consumers against unneeded (but wanted) purchase (Dacin et al., 2010), have led institutional theorists to think more about the deeper systemic change that might allow for such experiments to be created and adopted. Hoffman in from *Hersey to Dogma* (2001) has shown that these experiments require reciprocal change in underlying logics, and that the natural progression of these logics is from the regulative to the normative to the cognitive (also see Scott, 1995). The logics, in other words, need to become ever more deeply imbedded in the managerial mindset for new, beneficial experiments to be created. Unfortunately, a host of more recent studies has shown that the terrain beneath such experiments is usually hotly contested, and, as a result, the outcomes are often the outcome of multiple compromises. This is so for the allocation of water management systems across dry US states (Espeland, 1998), for curbing the use of DDT (Maguire and Hardy, 2009), and for reducing greenhouse gases affecting climate change (Hoffman, 2011; Schussler et al., 2014).

With regards to experiments, ITNE research has recently spent as much time considering

the role played by entrepreneurs and advocacy groups as change agents generating these experiments. The creation of more sustainable living arrangements in the barrio, for instance, is as much the result of the set of priests and church members in the Marti et al. (2013) study, as any set of legal and governmental systems aiding its creation (see Jennings et al., 2013 for review). Battilana and Dorado (2010) make a similar point in their study of actors involved in the creation of hybrid forms of financing organizations.

Atmospheric scientists have also played a key role in problematizing the climate change issue (Lefsrud and Meyer, 2012). Yet these experiments, particularly in legal and governmental systems, are unlikely to diffuse more broadly without advocacy groups promoting them. From an institutional and political point of view, such a claim seems completely logical; but from the normative perspective, advocacy groups seem to indicate some form of moral relativism. Their claims are simply based on their position in relational fields or social movements, and, thus, one position may be just a valid as the other, depending on one's point of view. Unless a stronger societal and environmental ethic is developed and injected into such ITNE work, accepting the experiments of groups and valorizing their leaders may lead us down the wrong path – or, alternatively, we could go back to trying to avoid signaling and sanctioning such efforts in the first place.

Failures. Like experiments, failures signal the potential for institutional change. ITNE scholars have used specific, high-profile cases of failures to dramatize the need for change. *Silent Spring* (Carson, 1962), the Santa Barbara oil spill (Molotch, 1970), the Cuyahoga River fire (Hoffman and Ocasio, 2001), *The Bhopal Syndrome* (Weir, 1986), *Normal Accidents* (Perrow, 1999), the Fukushima disaster (Aoki and Rothwell, 2012) and other well-researched exposés question current practice and signal the urgent need to re-assess the institutions that help lead to

such accidents. *Silent Spring*, for instance, has been used as one of the precursors assessing the side effects of chemical industry practice (Hoffman, 2001) and *Valdez* has also been used in work on BP Oil's Deepwater Horizon spill (Hoffman and Jennings, 2011) to allude to how in the past institutional systems in the oil industry have handled major spills.

Failures have also been used more directly, if still normatively, in ITNE research as triggers for institutional change in a field. General Electric (GE), while often lauded as a progressive firm, has been shown to shift polluting operations to subsidiaries and off-shore locations (Gehman, 2012). Exposure of such greenwashing has led to changes in stakeholder support and corporate reputation (also see Delmas and Burbano, 2011). BP Oil's Deepwater Horizon spill generated a lot of controversy, highlighting the anomalous nature of the event in the oil production field. From that point, its potential for changing practice could be traced through theorization and objectification to the stages where it began to lose momentum as a trigger. This appeared to be in the slow decision making process around liability, the lack of social mobilization across (not just within) affected communities, and strong efforts by the BP Group to work with US government officials to forestall more sweeping changes and repair relationships (Hoffman and Jennings, 2011). The failure of the various Copenhagen COP meetings on climate change, particularly the 2009 negotiation that were highly visible in the media, illuminated the complex nature of policy making in COP and the need to overhaul the system (Schussler et al., 2014).

Yet highlighting failure in ITNE research has not addressed the underlying normative issue of what constitutes better thought and practice and how might they be encouraged. Nor does highlighting failure require that ITNE scholars discuss their motives for studying failure in the first place. Ironically, these, like many items in institutional theory, are left implicit.

Policy. Within any form of institutional analyses, the role of government is paramount. Indeed, any discussion of institutional fields without the inclusion of government would, in the eyes of many, be considered a glaring oversight. Research in ITNE is no exception, with much research being devoted to the role of government in setting norms to address and ameliorate environmental and social grievances (Hoffman and Ventresca, 2002). Further, many such ITNE studies also examine the outcome of regulation; on the economic performance of companies (Barnett and Salomon, 2006; King and Lenox, 2001; Waddock and Graves, 1997), the development of clean technology (Kemp 1993; Schot, 1992;), innovation (OECD, 2000; Ashford, 1993), and the introduction of environmental management systems (Dahlmann and Brammer, 2011; Khanna and Anton, 2002; Delmas, 2001).

In particular, ITNE studies consider context to be extremely important with regulatory responses differing by private vs. public sectors (Jennings et al., 2011), industry characteristics (Dahlmann and Brammer, 2011), company characteristics (Prakash and Kellman, 2004), and the policy instrument being applied. For example, there has been a marked increase in research on the use of voluntary negotiated agreements and market-based instruments such as environmental taxes, and emission trading schemes which fit the regulatory and policy schemes within the dominant economic logics that are at play (Potoski and Prakash, 2004; Labatt and Maclaren, 1998). Further, there are important country differences in policy instruments (Sharifian, 2015). The use of negotiated voluntary agreements, for instance, is more common in Europe than in the United States (Glachant, 1994; OECD, 2003).

While many such policies have resulted in reduced environmental degradation, they are still culturally contentious. Adherents of opposing worldviews continue to debate and conflict over the role of government within market environments, particularly if such policies impose a

dampening effect on economic activity. Regulations regarding the environment are often central

to such debates and therefore, stand as touchstones for deeper cultural debates and contests over

the nature of society, the state of the natural environment and the interplay between the two

(Hulme, 2009; Hoffman, 2011).

Summary. As a means of resolving some of the tensions between institutional and

natural environment studies, ITNE research discusses moral issues indirectly and directly.

Indirectly, when ITNE raises issues such as toxins or global climate change, a better and worse

practice and outcome is implied. Less indirectly, this discussion of better ideas and practice can

be the focus of research, such as in "Talking Trash" (Bansal and Clelland, 2004), where

sustainability's meaning is investigated. Even more directly, environmental issues may be the

focus of policy efforts (i.e., Hoffman and Ventresca, 2002; Hoffman and Jennings, 2011), in

which case ITNE is more explicitly used to advocate for more sustainable outcomes.

Current Challenges Due to Renewed Tensions

As discussed in each of the sections above, in spite of efforts to combine institutional

theory and natural environment studies, tensions between them are still evident in ITNE

research. These range from: ontological tensions around integrating the social and biosphere

through the use of environmental logics and the degree to which human agency drives

environmental versus institutional issues; to epistemological tensions around how to encode and

assess two complex systems simultaneously; to normative ones around whether direct, indirect or

no moral stance should be taken by ITNE researchers on these subjects. These tensions may be

even more evident if we add two more recent developments in each domain: the entry into the

Anthropocene Era (Crutzen and Stoermer, 2000) and the increasing use of institutional

complexity theory (Greenwood et al., 2011; Thornton et al., 2012).

The Anthropocene. The Anthropocene Era refers to the argument proposed by a large group of geophysicists, paleontologists, archeologists, and climate change experts that we have entered a new geologic epoch, one that acknowledges that humans are now a primary operating element in the Earth's ecosystems (Crutzen and Stoermer, 2000). 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).

Offering more clarity to the concept, scientists have identified nine key biotic and geochemical markers or "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" (Gillings and Hagan-Lawson, 2014: 2). These include: climate change, ocean acidification, ozone depletion, atmospheric aerosol loading, phosphorous and nitrogen cycles, global freshwater use, land system change, loss of biodiversity and chemical pollution (Gillings and Hagan-Lawson, 2014). "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). Indeed, scientists believe that three have already been exceeded: climate change, biodiversity loss and the nitrogen cycle (Rockstrom et al., 2009).

The deterioration in each dimension is based on thresholds, some from which there is no

return, and the joint consequence of deterioration, in the short run, is volatility and more spike events – in the long run, systems collapse (Gillings and Hagan-Lawson, 2014). This emergent reality compels research in ITNE with a new urgency, one that directly challenges its position on many of the ontological, epistemological and normative tensions just discussed.

Institutional Complexity. Institutional complexity is a variant of institutional theory, one that focuses on multiple, sometimes competing logics and complex organizational fields in which organizations may have multiple responses and feedback effects – hence the label "complexity." In the Thornton et al. (2012) framing, seven generic social logics and their instantiation and expression in different fields, combined with more micro dynamics around decisions, politics, social movements, and entrepreneurial activity determine what thought and practice is adopted or abandoned in fields over time. In the Greenwood et al. (2011) framing, the field infrastructure and the response of organizations based on their ownership, governance, structure, and identity drive more of the institutional change (also see Greenwood et al., 2015).

Below we focus on the tensions in ITNE research, particularly those created by the use of Anthropocene theory and institutional complexity, and identify a few interesting areas for investigation (also see Hoffman and Jennings, 2015).

Ontological Tensions

The construct of the Anthropocene is based on the notion of an inter-connected, multi-domain system. On the face of it, this notion would seem to fit well with the multiple institutional logics that characterize complex organizational fields. In addition, the need to promote the construct and meaning of Anthropocene, partly using threshold shocks and partly with scientific discourse, would seem to fit with the need in institutional complexity to recognize

and theorize triggers via reflexivity. Thus, it might be possible to fit elements of the Anthropocene as inputs and context for the institutional complexity model.

But the Anthropocene also has a long time horizon, many systems, and non-linear threshold effects. As a result, the Anthropocene requires a different scale of social construction to capture it compared to, for example, capturing the notion of toxins in local aquatic environments (see Bansal and Knox-Hayes, 2013 for similar commentary). In addition, the Anthropocene re-inserts human agency into the ecological system as a prime cause of its dynamics and deterioration; whereas complexity theory sees agency as more of a response and less directly active. Therefore, at the ontological level, more work needs to be done to integrate the basic notion of the Anthropocene with that of institutional complexity.

As partly discussed in Hoffman and Jennings (2015), we see at least four areas as being fruitful for further integration: comparing the meaning of the Anthropocene with sustainability and considering the meaning and logic behind a resultant Anthropocene Society, adjusting the idea of environment risk, re-considering the importance of organizational resilience, and conceptualizing organizational ecosystems in institutional terms (also see Greenwood et al., 2015).

Epistemological Tensions

Because it involves long time horizons, carbon-related and usage data, studying the Anthropocene appears to require the use of big data. One cannot experience the multiple markers of this new era through one's senses or directly. Global scale increases in carbon dioxide or mean temperatures require complex aggregations of data and analysis, far beyond those available to individual citizens. Therefore, institutional efforts to recognize and address these changes are

necessary. Alternatively, environment studies might require deeper, almost archeological level interest production/consumption patterns in organizations, households and other units.

Complexity theory requires multiple logics in a field, variation in field maturity, variable and modal firm responses to moderated field pressures, and, eventually, an examination of the feedback loops. Macro and micro, along with qualitative and quantitative data are useful. Perhaps the upswing in carbon use and greenhouse gas emissions since 1950 would be a good starting point for ITNE, particularly if paired with carbon trigger and multi-field data. Also, consideration (once again) of attention and problematization in relational fields would seem to be a critical part of reflexivity in these studies.

Normative Tensions

The environment study of the Anthropocene requires that we think about better versus worse Anthropocene societies and whether human survival is even possible (Ellis and Trachtenberg, 2013). In short, it challenges directly ITNE's moral and normative neutrality on the types of outcomes toward which institutional processes lead human societies. It calls for a more expansive assessment of the stakes of institutional processes and again, compels a recognition of more or less competent actors in the debate and its outcome. Science and scientists are viewed as critical in making this assessment. Complexity appears, like its institutional theory predecessor, to be agnostic; but it does encourage the consideration of meaning and value as part of the reflexivity process, and also in identity-based responses to complex fields.

In ITNE work on the Anthropocene we might expect, then, greater consideration of happiness and survivability outcomes for fields and societies, whether positive institution-preserving responses to Anthropocene shocks are possible, and what form of new institutions

should be built.

We imagine that oscillations in institutional pressures and considerations of maintenance on the downside will become more prominent. One important moral question is whether the future should be viewed in apocalyptic terms, which may serve to create urgency, but also futility. Given the dire warning about carbon dioxide rising too rapidly by 2020, perhaps caution, and built-in pre-cautionary principles rather than specific outcomes should be considered.

Further, considerations of the Anthropocene Era compel a reexamination of the role and form of policy in a globalized context. For example, regulatory policies to address local or national environmental issues may be, and most likely are, inadequate for exploring the intricacies of creating a global market for carbon to address the global problem of climate change (MacKenzie, 2009; Callon, 2009). The examination of such issues could also help shape the ways in which markets are conceptualized and open questions over the very foundations of the existing social order (Rowan, 2014).

Final Thoughts

In the end, one might return to fundamentals and pose the question of whether the tensions between (and contraposition of) institutional theory of organizations with environmental science views of nature is really sufficiently enriching for either sets of views to warrant the continued effort.

We have tried to persuade the reader that the tensions between the two are still giving rise to interesting theoretical and empirical avenues, but we have not considered the opportunity cost of trying to combine them. Suppose we were just to end the effort and search for a different social science theory to combine with natural environment studies, in general, and the

Anthropocene, in particular. What characteristics would that theory need to have?

Any new approach would seem to require the use of multiple, interacting levels and long time horizons. It would also need to be sensitive to the needs of both natural systems and social orders to recognize and label Anthropocene phenomena. The role and responsibility of human agency would also be important to incorporate, but always within the context of a biotic reality that human knowledge does not understand nor even fully detect. Yet the bounded rationality and emotive sides of humans would need consideration, along with the likelihood of both intended and unintended consequences of action within ecosystem processes.

To us, this "other" approach would likely look institutional in many ways, but with some amendments as we have laid out in this paper. In fact, we believe that institutional theory is well suited to this task. The theory's vibrancy and visibility are due, in large part, to its distinctive stance on environmental phenomena. Institutional theory emphasizes environmental problems as being not primarily technological or economic in character, but behavioral and cultural. While technological and economic activity may be the direct cause of environmentally destructive behavior, it is our individual beliefs, cultural norms, and societal institutions that guide the development of that activity (Bazerman and Hoffman, 1999).

Therefore, we encourage ITNE researchers to continue with their efforts at combining the two theories. In this way we may be able to study and act on the ominous warning noted by Rachel Carson at the outset of this paper. Indeed, we do not really have the luxury of turning away from this reality and waiting. We need all of our collective intellectual and community-based efforts in order to make any progress on improving the relationship between organizations and the natural environment as we enter the new epoch of the Anthropocene, one for which our species has no prior experience. As noted scientist, Steven Jay Gould wrote:

"We have become, by the power of a glorious evolutionary accident called intelligence, 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."

— Stephen Jay Gould (1991) *The Flamingo's Smile*

As humankind embarks on this new reality of assuming a guiding role in the operation of the world's natural systems, we must begin to ask what this means for the institutions of society and how we understand them. Institutional theory can help us create a structure for exploring what the cultural and institutional basis is for entering into a new social and environmental reality, and the tools for teasing apart the key questions of analyzing possible and -- if our challenge in this paper is taken seriously -- desired outcomes.

Figure 2:
Publications Rates of Institutional Theory and the Natural Environment, 1995-2015
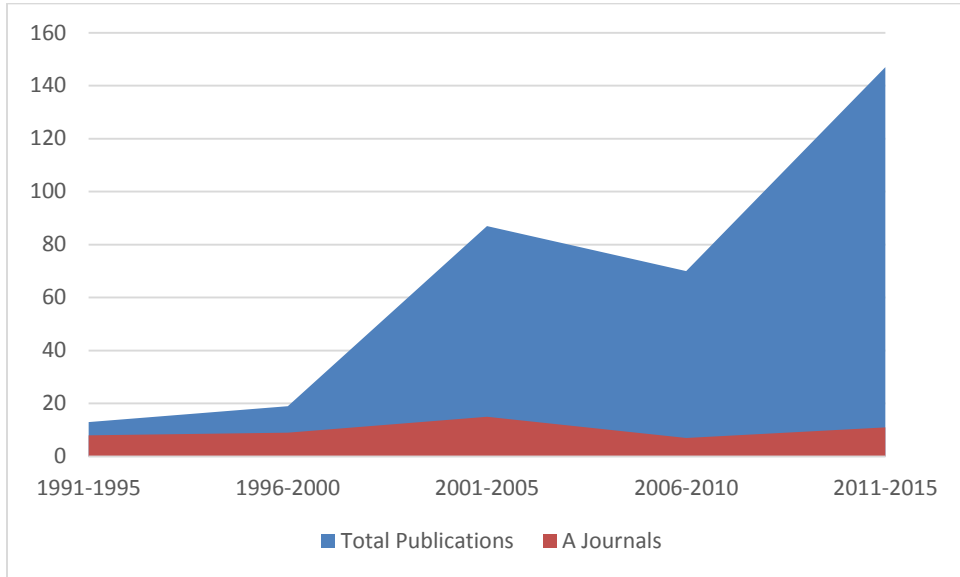
Figure 2:
Publication Rates of Business and Natural Environment, 1975-2010
(Hoffman and Georg, 2013)
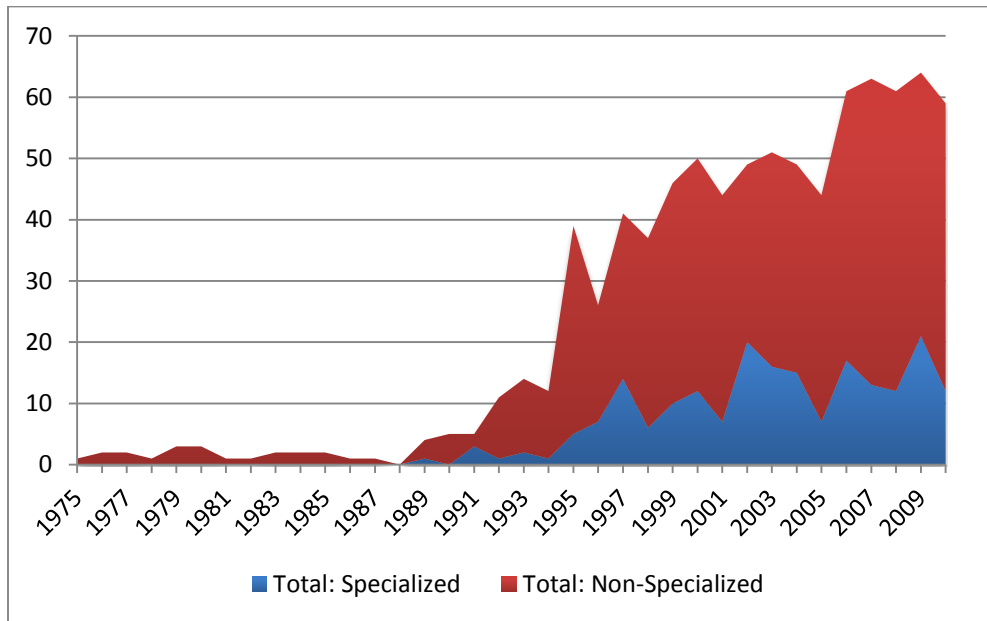
Table 1:
Tensions, Paradoxes and Opportunities in ITNE Research

	Tension and Paradoxes	**Resultant Research Directions**
Ontological	• The degree of integration and joint operation of the social and biophysical spheres • The role of agency within each.	• Logics • Triggers • Social Movements • Institutional Agents
Epistemological	• How to gather and analyze systematic, multi-level data on both the biosphere and social sphere • Transferring and generalizing from models and findings across levels and domains • Incorporating meaning and value ascribed by humans into the methodologies for generating knowledge	• Encoding ITNE Phenomena • Assessing ITNE Phenomena
Normative	• The contrast between the subtext of most environmental studies, which revolves around the preservation of nature and the balance between the biotic and social as critical for society versus that of institutional theory, which is typically silent (unsuccessfully) about such issues.	• Does It Pay to Be Green? • Experiments • Failures • Policy

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