GENERATIVE DISRUPTION:
THE SUBVERSIVE EFFECTS OF COLLABORATION

by
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As I write, I’m sitting in an apartment in Toronto looking out over the sunny afternoon skyline of the city, and watching sailboats on the distant lake. It’s now been four years since I left Toronto, and I remember very well the feeling of packing my limited possessions in an on my old Subaru, and driving towards the border. I was literally heading into the sunset, and felt a mix of sentimentality and excitement as I drove towards the United States, Cleveland, academia, and Case OB. It was a new place, a new phase, a new adventure! And then I was stopped at the border (beware of bringing old futons into the US more than 90 days before the start date of a student visa), spent the night in a motel just outside a large suburban mall, and drove back to Toronto the next day.

My next trip was a little longer, although I’m still back in the same city, at the same job, driving the same old Subaru. It’s an archetypal path, the return to the market of the Zen ox-herding pictures (without the enlightenment bit), or the return home of the conquering hero (without the heroic bit). But I did pick up a princess. And like these archetypes, coming back to where I started does not mean I’m at the same place. The past four years have been, well, four years of a human life - far too multifaceted to contort them into any list of adjectives. But I am deeply grateful for having the opportunity to experience them, and want to thank a number of people who made me feel fulfilled and happy on my journey back home.
To my committee, I hope you’ll see yourselves reflected in the best parts of the papers below. David, you have been an inspiration for almost a decade. Your work is rooted deeply in a profound understanding of social theory, without feeling cold or abstract. And your theory is informed by your experience without seeming cliché or obvious. When I think about integrating reverence for practice with scholarly depth, I think of you and your work. You combine compassion with clarity and humility with practicality in ways that are uplifting to those around you. During our work together I always felt in the presence of a master, and I am immensely grateful that I’ve had this opportunity to learn from you.

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It’s so impressive to watch as you create your own scholarly paths that are so true to who each of you are. I feel like I’m abandoning ship early but I’ll look forward to reading your articles and books on Taoist learning, authentic listening, and mindfulness.

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To my new family, Hisham, Julie, Walid, and Salim (Amira, hold on, don’t worry, you’re coming soon), thank you for providing an unimaginably warm and loving second home just two hours away. When I wanted to feel at home, celebrate a holiday, get away and relax for a bit, or just eat copious amounts of delicious food, I knew where to go. I always knew to expect your texts and calls when there was a big deadline coming up, and feel so much support and love from you. May we have many years to enjoy together in Columbus, Toronto, and elsewhere, inshallah.
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Generative Disruption:
The Subversive Effects of Collaboration

Abstract

by

Brodie Boland

This dissertation is comprised of three studies, each of which investigates the relationship between collaborative processes and subversive outcomes. The motivating idea of these studies is that significant, transformative change does not only result from conflict and contention. Indeed, collaboration between different social actors – while perhaps superficially conciliatory or moderate – may even be more subversive and disruptive than its contentious counterpart. Study 1 explores this idea in the context of an economic development and sustainability effort in an American ‘rust belt’ city, generating propositions of the collaborative processes that social actors use to advance disruptive change. Study 2, a review of the modern environmental movement, catalogs the collaborative tactics used by environmental movement organizations, conceptualizing a ‘repertoire of collaboration’ by which movements provide instead of disrupt resources, normative sanction, and cognitive frames. Study 3 then quantitatively tests the relationship between collaboration and breakthrough environmental technology innovation using a large set of patent and firm data, showing that collaboration between inventors produces more breakthrough innovations. These studies illuminate collaboratively subversive tactics for social actors, and challenge the contentious assumptions prevalent in social theory.
INTRODUCTION

Included are three studies that comprise my dissertation. In each of the studies below I have two goals. First, I explore an area of organizational theory in which assumptions and metaphors of contention predominate, and provide theory and empirical evidence that supports the efficacy of collaboration. Second, I attempt to show not only that collaboration can work, but also that it can be disruptive. Below is a brief summary of how each of these studies serve the above objectives.

Study 1: Getting Unstuck: How agents experience and overcome institutional embeddedness

This study reframes the ‘paradox of institutional embeddedness’ as an agentic instead of a theoretical paradox. I argue that the seeming theoretical paradox stems from two false reifications in social theory. First, that actors are separate from institutions. Second, that endogenous change is separate from exogenous change. In understanding that these are analytical constructions, not ontological realities, the terms of the theoretical paradox no longer apply. However, resolving a theoretical paradox does not make it any easier for actors to change institutions that are stagnant and pervasive. I thus ask two questions. First, how do actors experience institutional embeddedness? And second, how do actors then overcome this embeddedness? I answer these questions through a long-term study of an institutional change effort in the city of Cleveland.
I identify three dimensions of the paradox of embedded agency as experienced by social actors. The paradox of power is that actors with power have no incentive to change institutions, and actors without power have little resources to successfully change institutions. The paradox of legitimacy is that actors with legitimacy can’t engage in actions that compromise their legitimacy, and actors without legitimacy find it hard to make their actions matter. The agentic paradox of knowledge is that insiders have subjectively intimate experience without outside perspective, and outsiders have objective perspective without contextual knowledge.

To overcome this practical paradox of embedded agency, actors create different forms of collaboration between individuals and groups that are constrained by different elements of the paradox. By collaborating with actors that are subject to different types of social structure (e.g., being trapped by power or by the lack of it), actors can get unstuck from their institutional embeddedness. I identified three ways they do so. First, they suspend institutions by creating liminal spaces in which the co-presence of multiple structural grammars creates a temporary opening for change. Second, they circumvent institutions by using structures and frames that allow for actors in different parts of an institutional field to coordinate their action. Third, they configure institutions by creating hybrid forms that combine logics from different structural grammars.

This study shows that even in contexts where institutions are deeply entrenched and where the social field is fragmented and often divisive, actors can collaborate to overcome their institutional embeddedness. This study also
contrasts with the implication that collaboration is necessarily compliant or conformist. In Cleveland, these collaborations were transformative, disruptive, and even subversive. They changed formerly embedded norms, structures, resource allocations, and even physical features of a city that had become mired in the incompatibility between its industrial past and modern America.

**Study 2: Repertoires of Collaboration: Collaborative disruption in the modern environmental movement**

Social movement theory, for very good reason, has a long history of focusing on contentious processes. Because of this history, the assumption that change occurs through contention permeates almost all the major theories in the field. Research into how movements mobilize focuses on grievances; on how movements acquire resources for themselves and deprive their opponents of resources; and on how movements use political opportunity structures to gather allies to defeat their opponents. Beneath all of these theories is the metaphor of a battle between the mobilized many and the powerful few.

Despite research showing that collaborative tactics are frequently used by movements, and are in some cases displacing contentious tactics, the core social movement theories have not changed. In order to develop theory of how collaboration can lead to the achievement of movement objectives, I conduct an inductive study of the collaborative tactics used by the modern environmental movement. I supplement existing theory of ‘repertoires of contention’ by creating rich data and theory to articulate the ‘repertoires of collaboration’.
The results suggest that certain core aspects of social movement theory need to adapt to include collaborative tactics. First, movements mobilize for collaboration on the basis of shared aspirations, not shared grievances. Second, unlike the curvilinear relationship between political openness and prevalence of contentious mobilization, I suggest that there is a linear relationship between political openness and collaborative mobilization. Third, I suggest that movements achieve change through collaboration by facilitating - not disrupting - their targets’ access to resources, legitimacy, and knowledge. Finally, I propose that unlike the distancing effect of contention on the relationship between a movement and its target, that collaboration leads to increased interaction and interdependence between the two parties.

Similar to Study 1, this study shows that collaboration does not necessarily imply co-optation. I provide numerous examples of collaborative tactics that have resulted in significant changes in alignment with the environmental movement’s objectives. This study shows that the explicit subversion that occurs when protesters mass in Tahrir or Taksim or Times Square can be matched by a collaborative subversion that takes place on phone calls and, yes, even in boardrooms.

**Study 3: Effects of Collaboration on Breakthrough Solar Technology Innovation**

The third study takes a quantitative approach to the same two objectives, in the area of solar technology innovation. Existing technological innovation
research has suggested that collaboration can have a positive effect, but this research has only minimally explored the effects of collaboration on innovation quality. It also has not looked at the effects of collaboration on innovation in the inherently disruptive industry of environmental technology.

Using a patent database, I test the effect of the number of inventors, the number of assignees (organizations or individuals to whom the legal rights to the patent are assigned), and the geographical origins of these collaborators on the number of citations received by the patent. The number of citations is a measure of the quality innovation, and provides an indication as to whether the patent has had a significant effect on further technological innovation in the industry. I conduct a logistic regression and supplement this analysis with a robustness test using panel data to take into account unobserved controls.

The results show that the number of inventors has a positive impact on citations, that the number of assignees has no statistically significant impact, and that the number of countries of origin of the inventors has no significant impact. These results show that collaboration indeed can lead to more breakthrough innovations in the solar technology industry, but that the presence of individual inventors in different countries may not have a significant effect. Although the hypothesis relating to the collaborators’ diversity was not confirmed, this study does show that collaboration between multiple inventors can lead to more breakthrough inventions. Collaboration thus may not only be disruptive in cases of institutional change, but also in technological change.
The above three studies all suggest one simple lesson – that significant
disruption of existing social and technological structures can occur not only
through conflict, but also through collaboration. The studies propose theoretical
mechanisms by which collaboration can by subversive and suggest implications
for theory in institutional change, social movements, and technological
innovation. But more importantly they have practical implications for actors who
are working to disrupt, subvert, and change the institutions and technologies in
which we are all embedded.

Reflection on motivation

I will now take some time in the introduction self-indulgently reflect on
some of the general perspectives and motivations that have led me to write these
three papers, and that have formed as a result of the past four years’ foray into
academia. This should be read not as a scholarly account, but as an opinion paper
and personal reflection that is not constrained by the need to be embedded within
prior literature.

Why?

It is a combination of cliché and myth that human systems will (must?)
undergo a fundamental disruption in the near future. Cliché because it is obvious.
Human systems have impacted all of the planet’s main ecological systems, with
climate change, freshwater depletion, biodiversity loss, ocean acidification, and
other subsystem changes posing a demonstrable existential threat to human and
other life. The West’s belief in the liberating, salvific potential of free market liberal democracies now appears to many as merely the childish naiveté and optimism of civilizational youth. Increasing inequality, stagnation of mobility across socioeconomic classes, and the capture of institutions and policies by economic interests are not just Occupy movement posters, but empirical realities. Behind the noise of election and economic cycles, beneath the ebb and flow of each generation’s chosen mode of protest is an underlying drift, the essence of which is that we cannot continue to live as we have been living.

And it is myth because such disruptions have always been heralded, but only rarely arrived. There are few ages in which there has not been a group of people warning about the coming revolution or transformation. And so one must be aware of the possibility that our faith in a coming transformation is not cliché because it is obviously true, but only because it is perpetually held. There are few cases where civilizations have consciously chosen to pursue less wealth instead of more. And there are vanishingly few cases where institutions have acted, in a sustained manner, against their economic or political interests. And we must be mindful that dematerialization – whether in the individual or economic spheres – has been sought for millennia but we are still as rooted as ever in material consumption. This retrospectively derived skepticism is bolstered by the realization that, while in the developed world a decoupling of material consumption and economic growth may be possible, the needs and desires the vast majority of humanity remain fundamentally material. The construction cranes of Shanghai, the tar sand mines of Northern Alberta, and the water wars in
the West Bank seem far stronger arguments than the few examples of a truly
circular economy.

The facts of ecological depletion are unsympathetic. A fundamental shift
is needed. But is it coming? The answer, I believe, lies not in the realm of
prediction, but in the realm of creation.

**Prediction vs. creation**

"It is significant that "culture" is sometimes described as a map; it is the analogy
which occurs to an outsider who has to find his way around in a foreign
landscape and who compensates for his lack of practical mastery, the prerogative
of the native, by the use of a model of all possible routes."

- Bourdieu, 1977, p. 2

Much has been written (and some of it by the few people that may actually
read this!) on the fallacies and misplaced motivations that have limited the social
sciences from realizing their transformative potential. The aspiration of testing
objective phenomena for enduring relationships in order to create a cumulatively
growing body of cause-effect relationships has, at the very least, yet to be
realized. Instead we find theoretical fragmentation, findings that change over
time, and a painfully endless succession of papers qualifying prior research by
adding one or two variables. While scholars performing such meticulous work
are clearly contributing to the field’s progression, very few people I’ve spoken
with actually believe that the current system of highly guarded, necessarily
theoretical, incremental research is all that we can expect from the social sciences.
One tenured professor at one of the most esteemed schools in the discipline, who had been chief editor of the major journals and helped create an entire sub-discipline, said as she neared the end of her career, “I don’t think I was supposed to be a scholar, I feel like I’ve wasted a lot of my potential.” If such success within the discipline feels like a waste of potential, then what does this say about the discipline itself? The predictive model is limiting the potential of the social sciences both because it can often be inaccurate, and because it can be disempowering.

The idea that we can describe models that accurately represent enduring relationships between social phenomena must be carefully qualified. As others have far more comprehensively elucidated, social phenomena are not objective (the observer can affect the relationship between two variables), are infinitely contextual (any relationship between two variables can change in different physical or social contexts), and are inherently unstable (relationships between two variables can change over time for a multitude of reasons). But even more fundamentally, when researchers ‘measure’ variables they are drawing an ontological line that does not exist in the ‘real world’. They are, in essence, tearing a self-existent ‘thing’ out of the fabric of social reality. As I argue in ‘Getting unstuck’, this reification of social phenomena creates an array of problems for researchers. The seeming ontological ‘paradox embedded agency’ is an example of scholars constructing a problem that didn’t exist and then expending effort to solve it. In doing so the interfused, mutually constitutive nature of fields, agents, and institutions are obscured and scholarship replaces the
sense of possibility that can come from knowledge of the ultimate contingency of social reality with a feeling of stagnation and entrapment. Reification is the original sin of the social sciences.

The predictive model of the social sciences can also unintentionally collude with structures of power and privilege. As Giddens has argued, the essential motivation of predictive social science is ‘technological’ – that by understanding the relationships between objective phenomena, an actor can better manipulate reality to meet her objectives. This is an import from the physical sciences, in which understanding the interactions between physical forces, for example, can create faster moving aircraft or more efficient semiconductors. In the social sciences, identifying a curvilinear relationship between political opportunity structures and protest can supposedly aid governments in reducing protest, or enable movement leaders to mobilize. The institutional model of academia is that researchers identify such relationships, share them with students, who then use this understanding to act more effectively in the world.

The underlying epistemology of this technological model of social scientific knowledge is an assistant to power. By pursuing an ideal of objective social science, scholarship creates a distance between the observer and the observed both in its research epistemology and in the pedagogy that flows logically therefrom. This technological model of science generates forms of knowledge that are then transferred through what Freire (2000) calls the “banking model of education”, in which deposits of knowledge are made into learners’ minds by their teachers. As Freire has extensively discussed, this model separates
the teacher from the learner, privileges abstracted knowledge, and thus reinforces broader structures of status and power.

Such an epistemology, and the institutional structures of modern Western academia that support it, also create a tendency to emphasize the least empowering features of social life. The essential motivation of the technological model is to provide actors with new knowledge that will help them realize existing objectives. Such a motivation encourages research that focuses behaviors of social actors that have consequences other than those desired. In other words, within the current model social science research is most compelling when it emphasizes the errors or unintended consequences of social actors. This isn’t just an unconscious tendency, but an explicit methodology, an expressed stance. Too often have I heard the word ‘practitioner’ used as an ad hominem discount of a person’s perspective. And there are few dirtier words in management academia than consul@nt. Reflecting this condescension, one prominent organizational theorist referred to practitioner writing as “pablum” (Pfeffer, 2010, p. 22).

Because the object of study is the same as its consumer, technological social science is thus an essentially critical pursuit, in the colloquial, not Marxist, sense of the term. The business of social science is to criticize social actors. And yet, as Giddens (1984, p. 18) has said, "The 'findings' of the social sciences, as I have emphasized, are not necessarily news to those whom those findings are about."

Predictive social science research thus reifies social constructs, creating an illusion of permanence where there is only flux, a sense of isolation between constructs in linear cause-effect patterns where in reality there are endless
relationships. And the technological model of too much of current social science reinforces structures of power and social distance between those with and without abstract knowledge, between teachers and learners, between scholars and practitioners. But social science has also made significant contributions to human flourishing. Although the threads may sometimes be hard to trace, there is often an essential tie between some of the most important advancements in human society and the thinking and writing of social scientists. The question is thus not whether social science, but what kind of social science? Based on my conversations with many of you, and my reading and research and reflection over the past four years I would like to describe, yes, three stances that I think can help unlock a little more of the potential of this discipline.

**Reverence for the social actor**

"*Every competent social actor, it should be added, is ipso facto a social theorist on the level of discursive consciousness and a 'methodological specialist' on the levels of both discursive and practical consciousness.*" - Giddens, 1984 p. 18

While I am aware that this is may be seen as an anti-intellectual, self-justifying stance of one who identifies as a practitioner as much as a researcher, I cannot help but have deep admiration for the social-scientific knowledge of a Mansfield Frazier or a Wael Ghonim. Frazier, who realized that ‘The Vineyards of Chateau Hough’ could be a direct intervention in the mindsets of those who associated Hough with racial tension, violence, and poverty. Who didn’t build a fence around the vineyard, who hired the young people of Hough to work and gave residents of a nearby half-way house a bucket of chicken and a day of
outside work. Or Ghonim, who understood how to slowly erode Egyptians’ belief in the power of the Mubarak regime. Who realized that small protests about comically apolitical and insignificant topics would habituate Egyptians to the idea that protest was possible without the necessity of subsequent torture in Mubarak’s prisons. Where are there more insightful social theorists?

The most groundbreaking social science research I have seen since my time in academia was written not in the pages of Administrative Science Quarterly but in the tents of Tahrir Square, not in the Annals of the Academy of Management, but in the alleys of Hough and Kinsman and Fairfax. If there is one thing that social scientists can learn from the physical sciences it is to have not an attitude of condescension, but one of reverence for our subject. Social actors may not be aware of all the variables, may not use the same terminology, but they are very often geniuses. This, I believe, should be the starting assumption of the social sciences. That social actors are adept and brilliant and creative, that the performances of a single conversation are more skillful and complex and mysterious than social science can ever hope to understand. As physicists have a profound humility before the sublimity of subatomic particles or the vastness of the fundamental physical forces, so should social scientists start all our research with a fundamental wonder at the genius of social actors.

**Studying possibility not probability**

Predictive science aims to uncover generalizable cause-effect relationships. However given the underlying epistemological limitations of the
social sciences, stable, replicable laws governing social reality have yet to be
discovered, and there is little evidence that they soon will be. But this seeming
failure of the social sciences may actually be one of its greatest contributions.
The accumulation of studies demonstrating the contingency of relationships
between variables points not to a failure of science, but to a fundamentally
empowering fact. There are multiple potential outcomes, and human agency can
make a difference in determining which outcome occurs. Instead of aspiring to a
science that is deterministic or probabilistic, we should aspire to a science that
identifies the vast range of possibilities of social life. Scientists, by deeply and
rigorously inquiring into the complexity of our subject can broaden the visions
possible for social life, expand the repertoires available for human action.

Such a form of social science can be rigorously empirical, studiously
theoretical. And in a world where the multiplicity of social contexts has never
been more obvious, where emerging forms of organization and perception and
even the boundaries between the social, technological, and biological are
becoming increasingly unclear, this would be a profoundly useful form of social
science. Social life is always fuzzy at the edges, we are just perhaps more aware
of this fuzziness now. We know that there are vast differences in the operation of
power across cultures. We know that there are myriad ways to organize
governments, and the examples of Singapore and Bhutan, or the contrast between
China and India quickly undermine any absolute faith in any one political system.
And we see forms of organization emerging in social movements, terrorist
organizations, internet startups, cities, and online hacking networks that challenge
all of the assumptions of the organizational sciences. And yet in reading studies of such interesting phenomena it is too often painfully apparent that the writer has collapsed what they found most interesting, most unique in order to ‘speak to a current theoretical conversation in the literature’. They have separated the wheat from the chaff, and presented us with the chaff. Articulating the particularity of a context should not be in the ‘limitations’ section, but the introduction. In order to expand the range of possibility we need to know our options, and social scientists can be of great service by identifying, rigorously researching, and vividly presenting the diverse visions and forms of human life.

The selflessness of social reality

A friend of mine is a reporter for one of the world’s leading business newspapers, and has lived for a large portion of his adult life in the Middle East. An Australian, his knowledge of and love for Egypt would shame most Egyptians. In the summer of 2012 we sat on the terrace of a villa in the Italian region of Umbria with a close group of friends who had flown from around the world to be together. He is close friends with about half of the original small group of youth who started the Egyptian revolution of 2011, and had spent a great deal of time in Cairo during the revolution. He described observing the protests in Tahrir Square, and at one point was actually caught on the front lines of the protests when the police began firing, experiencing the terror of running from bullets that hit the men to his right and left. But what was most remarkable to him was that the power, the seeming omniscience and omnipotence of the Egyptian security state
wasn’t in any way real. It was only a web of actions based on the belief in Mubarak as an untouchable ruler. In my friend’s words, “the moment people stopped believing in it, the whole thing collapsed.”

The Arab Spring was overcoming the illusion of reification in action. My friend described how the early activists very intentionally sought to overcome this reification, to show the Egyptian population that Mubarak’s power was not eternal. Starting years prior to 2011, they staged small protests about comically insignificant things in very public places. Small and comical because it would not cause police repression or arrests. And public because when Egyptians became accustomed to seeing protest they began to believe that larger, more significant protests were possible. They worked for years as social theorists in action, striking at the reifications – Power, The Regime, The Security State – which prevented mass mobilization of the Egyptian people. And while it is impossible now to assess whether their efforts will result in a better life for the average Egyptian over the long term, their ability to see the lack of essential ‘thingness’ or ‘selfness’ of these towering features of their social reality created one of the most profound transformations my generation has seen.

To say that power is based on the illusion of reification may create a temptation to believe that we can merely think our way out of it, or that because it is based on an illusion it is itself an illusion. Neither of these are true. Structures of power and domination may be based on an illusion, but as Egyptians know tragically too well, bullets still fly and jails still imprison. Effective action must thus be based on knowledge both of the illusion and its substance. It must
undercut the reification that leads to power, but also be ready to deal with the very real, material consequences of the illusion. It is in this dual necessity that the essence of social science lies. It must both empirically and methodologically rigorous to deal with the possible material consequences of human action, but also theoretically humble enough to realize the ultimate contingency of its findings.

And so how does this relate to my central concern – the existential ecological threats facing the planet? Despite the daunting challenge, there are people like those I met in Cleveland who are working to shift us to a sustainable future. They are building bike lanes and vineyards, inventing new business models, and even developing fundamentally divergent modes of economic organization. I think social sciences has a far more important role than simply theorizing what these actors have done long after they’ve done so. Social scientists should study those agents that are having success and explore why and how this can be expanded. We should de-reify the constructs that have become fixed in our minds as inviolable barriers to progress, emphasizing the possibility to transform hardened social structures. We should study the fuzzy edges of social reality in which new forms of organization and altruism and coordination are appearing. Social scientists should not attempt to predict the coming transformation, we should create it.

References


Getting Unstuck:

How agents experience and overcome institutional embeddedness

How agents experience and overcome institutional embeddedness - explores how institutional entrepreneurs collaborate to overcome their embeddedness in institutional fields. Prior theoretical solutions to the 'paradox of institutional embeddedness' are reviewed and critiqued as inaccurately reifying distinctions between endogenous and exogenous change and between agents and structures. By resolving the theoretical paradox of institutional embeddedness, attention is redirected towards the practical paradox of institutional embeddedness, as experienced by social actors. Through a four-year study of an ongoing institutional change effort in the city of Cleveland, the nature of this practical paradox is elaborated. This study finds that social actors overcome institutional embeddedness through creating liminal spaces in which institutional constraints are suspended; independent coordination across social positions in the institutional field; and hybrid organizational forms that integrate the capabilities of multiple social positions.
INTRODUCTION

Institutional theory describes the “rules of the game” that shape and constrain behavior (North, 1990; 3). Although there are differences across disciplines, with sociological scholars emphasizing the conferral of legitimacy on actors and economic scholars focusing on formal institutions and their influence on transaction costs (Greenwood, Oliver, Sahlin, & Suddaby, 2008), the scholarship in both disciplines, primarily describes processes of conformity, isomorphism, and stability (e.g., Meyer & Rowan, 1977, Dimaggio & Powell, 1983; Greenwood et al., 2008). In recent years, institutional theory has been incorporating accounts of institutional change, with particular attention to change that comes from within the institutional field (Battilana, Leca, & Boxenbaum, 2009; Lawrence & Suddaby, 2006; Lawrence, Suddaby, & Leca, 2011; Maguire, Hardy, & Lawrence, 2004).

However endogenous change in institutional fields has been theoretically troubling, especially when institutions are broadly interpreted. The ‘paradox of embedded agency’ (Holm, 1995; Seo & Creed, 2002) describes the quandary: how can actors shape the very institutions by which they are constrained? This question is particularly salient when broad definitions of institutions are used that include “the very categories and frames by which actors know and interpret their world” (Garud, Hardy, & Maguire, 2007, p. 958). Such an understanding of institutions allows little room for agency, as actors’ ability to envision alternate institutional arrangements is itself delimited by the institutional field.
In this paper I explore attempts at theoretically resolving the paradox of embedded agency, and suggest that the paradox arises from a false reification of social structure as opposed to agency, stability as opposed to change, and endogenous as opposed to exogenous change. But theoretically resolving the possibility of endogenous change does not resolve the practical paradox faced by actors attempting to disrupt, change, or create institutions. As such, I reframe the paradox of embedded agency by exploring the following question: How do actors experience and overcome institutional embeddedness? In answering this question I conduct a longitudinal study of an institutional change effort in the City of Cleveland. By examining instances of institutional change within this effort at “profound or field-level change” (Suddaby, 2010: 15; Dacin, Goodstein, & Scott, 2002), I develop theory of how actors experience and interpret their institutional embeddedness, and the mechanisms by which they collaborate across institutional fields to overcome it in three ways: suspension by liminality, circumvention by coordination, and configuration by hybridity.

This study makes a number of important contributions. First, it resolves the ontological paradox of embedded agency and reframes this paradox as a practical, not a theoretical paradox. Second, it elucidates how actors experience embeddedness, as practical paradoxes of power, knowledge, and legitimacy. Third, it uncovers specific collaborative mechanisms by which actors overcome institutional embeddedness. By describing how actors create liminal spaces, coordinate independent action, and intentionally create hybrid organizations, it
provides practical direction to those who seek to create change in apparently stagnant institutional fields.

THE PARADOX AND ITS RESOLUTION

Institutional entrepreneurship and institutional work describes the actions engaged in by agents within a field, with the purpose of changing institutions (DiMaggio, 1988; Lawrence & Suddaby, 2006; Lounsbury & Crumley, 2007; Battilana et al., 2009). Institutional entrepreneurs mobilize resources, power, and other actors to change institutions to benefit their interests. Distinguished from forms of change that remain within extant institutional frameworks, institutional entrepreneurship refers specifically to divergent forms of change (Battilana et al., 2009). However divergent change that originates within an institutional field raises the paradox of embedded agency – how is it possible that actors embedded within an institutional framework can change that institutional framework. From the perspective of institutional theory, which attributes behavior to social institutions, such a question is an ontological quandary. To describe how actors overcome the paradox of embedded agency, scholars have theorized a number of openings in institutional constraints on agents. Broadly, these explanations for endogenous institutional change can be categorized as either agent-focused or field-focused (Battilana et al., 2009). Agent-focused explanations attribute endogenous change to the various positions of social actors, or to deviations between social practices as ostensively structured and their performance by social actors. Field-focused explanations attribute change to the accumulation of actors’
deviation from institutional structures; heterogeneity within institutional fields; or the boundaries between institutional fields. Each of these approaches will be summarized below.

**Performativity**

The first group of approaches to resolving the structure-agency paradox focuses on the act of agents’ deviation from extant structures in their performance of a given practice. Feldman and Pentland’s (2003) study of routines is an example of this approach. Drawing on Latour’s (1986) terminology, they distinguish between the ostensive and the performative aspect of routines. As individuals vary how they perform a routine at a given place and time, the ostensive routine changes, creating structural drift. Thus intentional or unintentional deviation from institutions can result in institutional change. This view creates a distinction between structure and agency, positing a form of abstract structure (for example, the specification of how an organizational routine should be performed), and variation from this abstraction in the form of agentic choices. Below, I will explore this distinction and propose that it inaccurately constructs an ontological paradox where none is necessary.

**Social position**

A second approach emphasizes the varying nature of institutions across an institutional field, but focuses on how the social position of actors can create varying degrees of constraint by institutions (Hargrave & Van de Ven, 2006;
Leblebici, Salancik, Copay, & King, 1991; Rao, Morrill, & Zald, 2000). Social position may shape actors’ perceptions, beliefs, and interpretations of a social field, affecting their recognition of the possibility for divergent change and alternate possible institutional arrangements (Battilana, 2006, 2010; Dorado, 2005). It may also affect their ability to bring about these alternatives because of differences in the ability of actors from different social positions to legitimize the change attempt (Battilana, 2006, 2010; Dorado, 2005). Entrepreneurs with higher status or in certain network positions may be able to assemble coalitions around a change effort (Fligstein, 1997; Maguire, Hardy, & Lawrence, 2004; Phillips, Lawrence, & Hardy, 2004). Finally, social position may either create the incentive to change institutions because of a lack of resources, or may facilitate actors’ attempts at institutional change because of their ability to support such attempts with resources (e.g., Maguire et al., 2004). At the organizational level, for example, firm size may affect the resources available to invest in sustaining change efforts (Dorado, 2005; Greenwood & Suddaby, 2006; Greenwood et al., 2002).

One lens on social position has been the degree of institutional centrality or peripherality of an actor within an institutional field. Research has suggested that both institutional peripherality and institutional centrality can affect an actor’s propensity towards institutional entrepreneurship and their success in the change effort (Garud, Jain, & Kumaraswamy, 2002; Greenwood & Suddaby, 2006; Greenwood et al., 2002; Haveman & Rao, 1997; Kraatz & Zajac, 1996; Leblebici et al., 1991). In contrast, institutionally peripheral actors are seen as having
greater incentives to disrupt existing institutions, more freedom to act in ways not considered legitimate within existing institutional bounds, and at times greater legitimacy amongst other outsiders who want to create change (Garud, Jain, & Kumaraswamy, 2002b; Haveman & Rao, 1997; Kraatz & Zajac, 1996; Leblebici et al., 1991). Actors who are situated in the overlaps of multiple fields may also be more likely to initiate divergent institutional change (Emirbayer & Mische, 1998; Sewell, 1992). In addition, the extensive strand of literature studying exogenous shocks on institutional fields highlights the role that outsiders play in changing institutions (e.g., King & Soule, 2007).

Given that the above studies posit alternate mechanisms for the affordances created by a particular social position, it is plausible that collaborations between diverse actors may create configurations in which the mechanisms available both to the powerful and the powerless - or the high and low status, or the institutionally central and peripheral - are combined. However there has been little exploration of how each social position creates unique limitations and affordances that can both embed actors attempting social change and enable those who are willing to reach across the social structural landscape to collaborate with those in different social positions. The empirical component of this study will explore these processes of collaboration across social positions.

Accumulation

A third group of approaches attempt to overcome the ‘heroic’ imagery of a single institutional entrepreneur transcending the institutions within which they
are embedded and creating change. Such approaches refer to a process of ‘accumulation’ of small changes throughout an institutional field that eventually amount to an institutional change (Dorado, 2005; Van De Ven & Garud, 1993). Small deviations or changes by individual actors may not be intentionally focused on creating field-level change, and may not be subject to the constraints of institutional forces, however the sum of these small changes can create institutionally divergent change over time. Such an approach describes distributed, field-level, often unconscious institutional drift. This study explores how institutional entrepreneurs who are able to tilt the institutional field in the direction of their change objective can in fact consciously set these processes of accumulation in motion.

**Field heterogeneity**

A fourth approach to resolving the paradox calls attention to the overlapping nature of institutional fields. Institutional fields are characterized by internal contradictions and conflicts, and overlap one another, such that any given agent would likely be exposed to a vast multiplicity of institutions. Studies suggest that where fields overlap, institutional entrepreneurs may be more likely to emerge (e.g., Rao, Morrill, & Zald, 2000). Research on boundary work (e.g., Zietsma & Lawrence, 2010) and the interaction between institutionally central and institutionally peripheral actors (e.g., O’Mahony & Bechky, 2008) all address the paradox through calling attention to the boundedness, multiplicity, and overlapping nature of institutional fields. This study explores how institutional
entrepreneurs do not only manipulate boundaries, but can suspend or collaborate far across boundaries to use the combined the characteristics of multiple institutional fields in order to achieve their change objectives.

**Boundaries**

Finally, endogenous institutional change can be stimulated by the agentic manipulation of these boundaries, and the influence this has on the practices of social actors (Zietsma & Lawrence, 2010). Boundaries - which separate one institutional field from another, or create groups of actors and entities - can be the subject of agency. Zietsma & Lawrence (2010) specify that work of bounding, breaching, bolstering, creating, and connecting across boundaries can be reflexively carried out by actors to create institutional change. This boundary work can help to create, sustain, or disrupt practices and thus lead to field-level change (Zietsma & Lawrence, 2010). This study attempts to demonstrate that positing objective boundaries between institutional fields is inaccurate, and that doing so is another cause of the perceived paradox of embedded agency.

**DIFFERENTIATING ONTOLOGICAL AND PRACTICAL RESOLUTIONS**

Paradoxes are seemingly intractable dilemmas that are best resolved when the perspectives that each pole of the paradox represent are integrated within a unifying, higher level perspective. By exploring the limitations of the theoretical
foundations that appear to give rise to the paradox of embedded agency, we can point in the direction of a perspective from which the paradox can be resolved.

Reification of Social Structure

The first of such limitations of these approaches to resolving the paradox of embedded agency is the extent to which many of the above theoretical propositions reify social phenomena. Attributing ontological, static existence to constructed social phenomena ignores its impermanent, dynamic nature (Weick, 2006; Weick, 1979), and conflates our socially constructed understanding of phenomena with the phenomena itself. As Giddens has warned, reification is far from just a technical and irrelevant theoretical error:

“The reification of social relations, or the discursive ‘naturalization’ of the historically contingent circumstances and products of human action, is one of the main dimensions of ideology in social life.” (Giddens, 1984, p. 25)

By using reifying metaphors of institutional fields and boundaries in order to explain change, our theoretical metaphor occludes sources of endogenous change and misconstrues sources of exogenous change, while creating a false distinction between the two. Two forms of reification have implications on theorizing endogenous change: reifying structure as distinct from agency, and reifying the inside versus the outside of an institutional field.

Reifying a separation between structure and agency
While highlighting the difference between the ostensive (structural) and performative (agentic) aspects of routines is analytically useful at the level of understanding organizational change (Feldman & Pentland, 2003), the perception that performative deviations from a reified objective structure will have a reflexive influence on this objective structure creates a false distinction between agency and structure. An essential purpose of practice theory has been to resolve this dualism. Giddens and other practice theorists (Bourdieu, 1977; cf. Schatzki, 2001) have argued that structure and agency are in fact mutually constitutive, and that separating the two - while potentially analytically useful - is ontologically inaccurate. Many applications of structuration theory to the organizational sciences portray the interaction of structure and agency in a fundamentally dualistic fashion. Structure is considered an objective reality, often pictured in figures as an upper pathway, whereas agency is portrayed as a lower pathway that creates an opening for indeterminacy (e.g., Barley & Tolbert, 1997). Such a depiction, while accounting for both structure and agency, fails to resolve the underlying duality. This ‘bathtub’ (Anderson et al., 2006) view of social process almost inevitably results in reductionism or structuralism. Giddens (1984), in contrast, used Escher’s illustration of two hands simultaneously drawing one another to portray the notion that structure is constituted by the interconnected practices of agents, and these practices are in turn constituted by structure.

Despite the above interpretations of structuration theory in the organizational sciences, far from collapsing macro or structural sociological perspectives into the ‘microfoundations’ (cf. Devinney, 2013), the structuration theory approach
recognizes the extent to which structure permeates social reality. Structure is not an architecture that merely delimits the outer boundaries of possible behavior by social actors. It is instead manifested in the beliefs, relationships, conversations, resources, and physical possibilities that are the proximate materiel from which agents constitute action. Because structure is constituted by agentic action, there is no place or time at which structure becomes static. It exists only through its manifestation in the notions and behaviors of social actors. The notion that structure or institutions are ‘outside’, ‘above’, or in some other way separate from actors is consequential and problematic. As Barley & Tolbert (1997) explain:

“The problem with this approach is that it depicts an institution as somehow distinct from those who comply and, more importantly, from the act of compliance itself. The result reifies the notion of institution.” (Barley & Tolbert, 1997)

Reifying a separation between endogenous and exogenous

The second form of reification relates to the paradox’s concern for endogenous vs. exogenous change. The paradox assumes that endogenous change is problematic – as it is a deviation from institutional structures within which agents are embedded - whereas exogenous change is not. In this view because exogenous change issues from outside the institutional field, it is not subject to the institutional constraints of the field and is thus unproblematic. This distinction is premised on there being an inside and an outside of an institutional field in an ontological, not just an analytical, sense. More specifically, for endogenous
change to be problematic there must exist an institutional field that is ontologically separate from other institutional fields. This, however, is clearly not the case. Institutional fields have constant and plentiful flows of information, resources, actors, and norms from ‘outside’ the field.

Accounts of boundary work are a useful example. Even where formal boundaries exist in actors’ and scholars’ depictions of structure, they do not exist in an objective, ontological sense. While recognizing actors’ notions of formal boundaries and the influence such notions can have on institutional maintenance and change is important, it is equally important that we do not confuse the map for the territory. Boundaries are practices, or more accurately, boundaries are practiced. They gain their social effect by their instantiation in agents’ actions, and do not have any inherent existence. At the same time, their existence in multiple agents’ cognitive maps, their formalization in laws or other artifacts, and other such manifestations of structure can mean that boundaries still affect behavior. Boundary work occurs wherever there are boundaries, even when such boundaries are apparently static and agents treat them as given. There are no actual boundaries between institutional fields, no such thing as endogeneity or exogeneity in ‘the real world’. Instead, social reality is characterized by vast, fluid, interpenetrating constructions. The dualism upon which the paradox of embedded agency is premised – between exogenous and endogenous change – is a theoretical construction, not an ontological reality, and thus does not pose a theoretical paradox.
The two forms of reification suggest two underlying theoretical challenges to notions of the paradox of embedded agency. First, when social structures are accurately represented as being constantly constructed by social actors, the assumption - which underlies the paradox of embedded agency - that institutional forces tend towards continuation of existing structures while agency is the source of change - must be abandoned. Agency is the instantiation of structure, and structure is the materiel from which agents constitute action. Both agency and structure are the source of both continuity and change, there was no static institutional field to begin with. And second, by recognizing the false construction of a dualism between exogeneity and exogeneity, the paradox of embedded agency loses its meaning – as embeddedness implies an endogeneity which does not exist. The paradox of agency is a paradox only so long as institutions are ontologically apart from agents and exogeneity is ontologically apart from endogeneity. Recognizing the illusory nature of these separations resolves the paradox.

However, resolving the theoretical paradox of embedded agency does not make it any easier for actors who are struggling to change the institutions within which they feel embedded. The academic perspective on embedded agency must be reframed as the study of a practical problem facing agents. The orientation then shifts from a purportedly ‘objective’ analysis of sources of change in institutional fields to an approach that seeks to understand social actors’ interpretations of structure and its constraints. Endogenous change in institutional fields - when considered realistically by resisting reification of otherwise
analytically useful social theories, and through the lens of the mutual constitution of structure and agency - is not a theoretical problem, but it is a practical problem.

In short, change is theoretically possible, but it is still hard. Agents face their embeddedness from the perspective of their social position, subject to institutional pressures, and with the inertia of habitus (Bourdieu, 1977), not from the birds-eye view of social theory. The paradox of embedded agency must thus be reframed from a question of social theory to one of social practice. How do agents experience and overcome their embeddedness?

**Actors’ Intelligibility**

"Everyone should take responsibility for what's in their eyesight."

Mansfield

10-year-old: “I like my life sciences class, but I don’t like my social sciences class.”

Author: “Do you think social science is science?”

10-year-old: “No.”

Author: “Why not?”

10-year-old: “Because when I want to raise my right arm, I raise my right arm [raising right arm], and when I want to raise my left arm, I raise my left arm [raising left arm].”

1 Aside from individuals who are easily identifiable given descriptions of their role in change efforts in Cleveland, most names are pseudonyms.
Giddens (p345): “The rationalization of action is causally implicated, in a chronic manner, in the continuation of day-to-day actions. The rationalization of action, in other words, is a major element of the range of causal powers than [sic] an individual, qua agent, displays.”

Redirecting our attention from theorizing endogenous change to understanding actors’ conceptualizations and responses to their practical institutional embeddedness opens theories of institutional change to acknowledging the various forms of knowledge of social actors. Deterministic theories of institutional change that attempt to generalize processes into static theories reduce, not increase, our awareness of the vast complexity of forms of institutional change (Gergen, 1994). By theorizing relationships between institutional field characteristics and processes of institutional entrepreneurship without describing the agentic choices that are implicated in this relationship, scholars adopt a hard structuralist perspective to the exclusion of agency, and write over the central function of actors’ interpretations of their environments and rationalizations of their actions.

This is not suggest replacing macro perspectives on institutional change with micro perspectives. It is instead an argument for incorporating actors’ interpretations and rationalizations into our theories of institutional change. Social structures are often not opaque to the actors embedded within them. Giddens (1984, p. 345) describes three sources of action: actors’ rationalizations, unconscious influences, and influences which affect the conditions within which
action is carried out. While actors’ knowledgeability and rationalizations are bounded, they often exhibit a significant degree of awareness of social structure, and reflexively engage in complex manipulations of this structure. Many of the forms of collaboration discussed in this study represent sophisticated interactions between agency and structure, and while the actors mentioned in the cases I refer to may not describe their actions with the same language used by social scientists, I will presume their conscious awareness and intention unless there is reason to do otherwise.

A comprehensive theory of institutional change would thus incorporate actors’ rationalizations as key components that determine forms of institutional entrepreneurship. While emphasizing actors’ knowledgeability and efficacy, this approach is orthogonal to the debate between ‘heroic’ and ‘collective’ views of institutional change. Focusing on actors’ interpretations would also apply in cases where many small actions of distributed individuals leads to accumulation of institutional change. This empathic view reframes questions of institutional embeddedness. Instead of asking ‘how is endogenous change possible in institutional fields?’ it asks ‘Do actors feel embedded? How do they describe their embeddedness? What actions are possible for embedded actors, and how do they choose between them?’ Such an approach would seek to discover the multiplicity of possible paths actors can take, and the interpretations and assessments they make in choosing actions from the set.

In emphasizing the interpretations of social actors we must also be mindful not to reify actors as individuals or agency as a concept. Doing so would be the
mirror image of a reification of analytically useful structural distinctions. Actors are not singularities in space or consistencies in time. The highlighting of one self into figure from amongst the ground of a set of persons may be useful narratively, psychologically, biologically, and analytically, but it is reification. Giddens (1984, p. 51) cautions against this homunculal notion of the self:

“The self, however, is not some kind of mini-agency within the agent. It is the sum of those forms of recall whereby the agent reflexively characterizes ‘what’ is at the origin of his or her action. The self is the agent as characterized by the agent. Self, body and memory are therefore intimately related.”

Maintaining awareness of the reified nature of our typical constructions of self prevents the fallacy that attributes reality to agents and a nebulous unreality to structure. Neither are any more or less ‘real’ than the other, and understanding institutional change requires understanding their mutual constitution at all levels: from momentary acts to macrohistorically enduring structural properties. In sum, we need to include both conditions and characters in accounts of institutional change, and this study focuses on adopting the perspective of agents in understanding the paradox of embedded agency. In doing so it becomes clear that there are highly agentic dimensions to the current attempts at resolving the paradox of embedded agency at an ontological level. Actors understand social position and can create combinations of social positions that help them overcome embeddedness. Institutional entrepreneurs understand processes of accumulation
and may attempt to tilt the institutional field to their advantage. And boundaries can be worked on, or even suspended. This study explores actors’ experience of and successful attempts at overcoming their institutional embeddedness.

**RESEARCH OBJECTIVES**

When we modify our understanding of structure, agency, and institutional fields, the paradox of embedded agency is reframed. Instead of being ontologically descriptive, it reveals social actors’ perception that they are constrained by social structures. The paradox, by being resolved at the level of our theory of the mutual constitution of structure and agency, remains salient for actors for whom such theoretical descriptions of the possibility of change do not solve practical dilemmas of how to change. The paradox, resolved at the level of social theory, must still be constantly resolved at the level of social practice. How, then, do agents resolve their own paradoxes of embedded agency?

This study will take the agentic perspective on overcoming institutional entrepreneurship, asking two general questions. First, I will elaborate how actors experience and describe their own institutional embeddedness. Second, I will explore how actors overcome this embeddedness.

**METHODS**

The questions that initiated this study were how actors (1) experienced, and (2) overcame institutional embeddedness in attempting field-level institutional change. I was particularly interested in elaborating theory of how actors from
various parts of an institutional field collaborated to create such change, and the conditions and consequences of such collaboration. Given the extensive existing theory on institutional entrepreneurship; field-level institutional change; practice and boundary work in institutional change; and mobilization of extra-institutional action for institutional change, my objective was to elaborate a specific area of theory - that of how actors experienced and overcame their embeddedness in the context of an apparently stagnant institutional field. I was also interested in hearing agents’ own accounts the institutional constraints they faced and how they overcame such constraints. Given the objective of elaborating theory using the perspective of social actors, a grounded approach (Glaser & Strauss, 1967) was appropriate. In generating grounded theory, I sampled on the basis of theoretical salience; iterated between data-collection, analysis, reviewing extant theory, and theorizing; and was cognizant of my social position in the field while allowing my theoretical framing to evolve over the course of this four-year study. These methods are described below.

**Theoretical Sample**

As suggested for grounded theory development, I collected data not by random sampling or to represent broader social dynamics, but on the basis of its theoretical relevance (Glaser & Strauss, 1967; Locke, 2001; Suddaby, 2006). As I was exploring how actors interpreted and overcame institutional embeddedness to achieve field-level change, I required a context with two characteristics: a) an institutional field characterized by embeddedness; b) an attempt at creating
divergent institutional change in this field. The City of Cleveland satisfied these criteria.

**Cleveland – a fragmented, embedded institutional field**

Cleveland was once one of the most prosperous cities in the world. One of the epicenters of the early steel, oil, and automobile industries, it rivaled New York and Chicago in economic influence and industrial output. In the late 19th century, Cleveland’s Euclid Avenue was home to many of the richest families in the world, who invested much of their wealth in bolstering the physical and institutional infrastructure for industrial production. Extensive private and public resources were invested in large factories, shipping facilities, and the roads, buildings, and institutions required to support this industry. The Rockefellers and other wealthy families who lived in Cleveland helped to build and endow organizations such as the Community Chest (which later became the United Way), the Cleveland Foundation (one of the world’s first community foundations), and the Cleveland Clinic (a world-leading hospital system), that still dominate the institutional landscape of the city.

As industry grew, waves of immigrants arrived, forming ethnic enclaves that often focused on a single or a small set of industries. In the late 19th century Italian immigrants developed stone and marble works, forming the Little Italy community. Central and Eastern European immigrants arrived in what came to be known as Slavic Village, to work in the steel and textile mills, and in the port on Lake Erie and the Cuyahoga River. Two waves of African American migrants arrived, settling in neighborhoods such as Kinsman and Hough. At its peak in
1950, Cleveland city’s population was just under 915,000 (US Department of Commerce, 1973). However, as the city grew, Cleveland became increasingly segregated along economic, ethnic, and racial lines. This ethnic fragmentation was accompanied by economic fragmentation, as the industrial profile of the city formed clear distinctions between factory owners, managers, and labor.

Despite this fragmentation, until the mid-20th century, Cleveland was prospering on the basis of a system of institutional, physical, and cultural structures that were suited for an industrial economy. Towards the end of the 20th century, however, the confluence of a decline in the American manufacturing industry, municipal governance failures, and other local issues challenged these structures’ efficacy. As the steel, oil, and automobile industries migrated elsewhere, Cleveland’s factories, warehouses, ports, and transportation infrastructure transformed from productive assets to liabilities. These economic strains opened the fissures in Cleveland’s social fabric. Strikes and riots were the most obvious symptoms of these social tensions, culminating in the Hough Riots of 1966, in which a number of people were killed. In a poignant illustration of Cleveland’s fragmentation, the wooden deck of a large pedestrian suspension bridge built over the Cuyahoga Valley to connect Slavic Village with the predominantly African American Kinsman community was burnt. Still strikingly large, it is now a rusting skeleton connecting a public housing development and a community full of abandoned homes.

An attempt at amalgamation of the dozens of cities, townships, and villages within the Greater Cleveland area failed, and as tax revenues became increasingly
concentrated, the social and physical infrastructure in whole communities began to collapse. A reinforcing cycle emerged of businesses and middle and upper class families moving to the suburbs, taking their taxes and consumer spending with them, and further weakening the neighborhoods they had abandoned. A precipitous drop in population and economic output resulted in outcomes familiar to cities in America’s rust belt. Abandoned factories, warehouses, ports, and homes dominate the streetscapes of a city built for an industry that has moved elsewhere. A city physically, economically, culturally, and institutionally designed for steel and oil and shipping became starkly ill suited to the sources of economic growth that exist in today’s America.

In 1969, this slow decline was dramatically highlighted as the Cuyahoga River, saturated with toxic pollutants from years of industry, caught fire. Time Magazine showed pictures of bellowing black smoke filling the sky above a flaming river, firefighters futilely spraying water on the river in an attempt to halt the blaze. This apocalyptic scene galvanized an emerging American environmental movement, and led to the Clean Water Act and the Environmental Protection Agency. It also made the post-industrial environmental degradation of Cleveland painfully apparent, as a century of industry had polluted the river, lake, air, and soil. The physical and institutional structures that had underpinned its former prosperity became an iron cage (DiMaggio & Powell, 1983) within which the city was embedded. While many of today’s Clevelanders hope for a return of industry, there has arisen an increasing belief that Cleveland needs to fundamentally transform the physical, institutional, and human structures of the
city for a new era. Against this backdrop of a city in post-industrial ecological, institutional, and economic decline, Clevelanders from a variety of backgrounds began working to reshape the outdated institutions of their city.

**An institutional change effort**

In 2005, Mayor Frank Jackson created the role of Sustainability Director of the municipal Cleveland government (hereafter the ‘City’) with financial support from two of Cleveland’s major foundations. Originally focused on identifying sustainability opportunities within the City’s own operations, individuals both within and outside the City government began to see an opportunity to instigate a broader change effort. In 2009, in consultation with the Sustainability Manager, the Mayor convened an initial ‘Appreciative Inquiry Summit’ (Whitney & Cooperrider, 2000), which included approximately 700 participants representing all segments of Cleveland society. The objective of this summit was to create a common vision for Cleveland, and to mobilize individuals and organizations to achieve this vision. The vision created at the summit, called “Sustainable Cleveland 2019” (hereafter, “Cleveland 2019”) was “building an economic engine to empower a green city on a blue lake by 2019.” To achieve this vision, participants designed 28 initiatives in areas such as clean water, education, local agriculture, transportation, manufacturing, and energy efficiency. A Steering Committee representing many of Cleveland’s major businesses and other institutions was created to guide the effort, and dozens of working groups formed at the summit in order to manage the 28 initiatives. The effort involved a wide array of Cleveland society, and while the extent to which it will realize its final
objective is still uncertain, it has created a number of divergent institutional changes, ranging from the creation of new laws; the cancellation or change of previous laws; shifted resource allocations and resource allocation processes; changed organizational priorities; new businesses and organizations; new institutional links between existing organizations; and physical changes to the city.

The institutional change effort attempted to shift Cleveland from an economy based on industrial production to one based on ecological sustainability. Such an objective required changes in an array of institutions that had previously been organized according to the necessities of an industrial economy. This was an instance of institutional entrepreneurship in a field characterized by stagnation and embeddedness, with the objective of fundamentally changing many of Cleveland’s institutions. It provided an appropriate context within which to explore the theoretical questions described above. Cleveland’s institutional stagnation provided a context within which I could understand how agents experience institutional embeddedness. The effort at fundamental institutional change provided a context to explore how they overcame this embeddedness.

**Researcher Position**

As I had access to the effort from its inception, I developed a temporally immersed, processual, and agentic perspective on the efforts and outcomes of these institutional entrepreneurs. Over the subsequent four years I collected data from five sources. First, I observed public conferences, working group meetings, steering committee meetings, and events. Second, I interviewed individuals
involved in cases of institutional change. Third, I analyzed emails, meeting minutes, reports, and other archival data from the institutional entrepreneurs. Fourth, I read news and reports from third parties about the institutional change efforts in Cleveland. Fifth, I examined data such as economic, land-use, demographic, or other indicators. Table 1 provides an overview of the data collected.

My role in the field was as an observer. Some of the public meetings were very large (up to 700 attendees) with participants divided into smaller discussion and working groups. In such contexts I typically joined a sub-group, introduced myself as a researcher, but participated only in introductions, and very infrequently and minimally in the group conversations. In steering committee and other meetings I was expressly an observer with no participant role. In interviews, I was also expressly a researcher. I was personally sympathetic to the objectives of the change effort, which allowed me to empathize with the perspective of social actors attempting to create change in the city. However I was careful to reflect on how this perspective affected my interpretations through short reflective memos written following interviews, observations, and at other points throughout the process of data collection. While this support for the objectives of the change effort may have colored a study evaluating its success or
failure, I believe it was actually useful in understanding the agentic perspective necessary for the theoretical questions of this study.

**Unit of Analysis and Analytical Method**

As my objective was to understand how actors overcame institutional embeddedness, I continued the theoretical sampling approach within this broader context by focusing on instances where attempts at institutional change were deemed successful. See Figure 1 for an example of how I captured successful cases of institutional change. I used information from archival data, public meetings, news reports, and other indicators to identify cases of successful institutional change, and then focused interviews and further research on exploring these. I wanted to understand how actors described their intentions and their explanations of how they experienced, and then were able to successfully overcome their embeddedness in Cleveland’s institutional field. I chose subsequent sources of data on the basis of emerging theoretical propositions, and iterated between analyzing the data, collecting further data, and comparing my theorizing with extant literature. Although I will present my theoretical findings below and the data that support them as finished, through the process of grounded theory development I iterated between many evolving, alternate theoretical framings.

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Insert Figure 1 about here

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Evolution of theory

Over the course of the multiple years observing the change effort in Cleveland, I moved through dozens of theoretical models. An early, rudimentary conceptualization described how institutional entrepreneurs intentionally manipulated the three institutional forces common to institutional theory (Boland, 2010). A subsequent version described the instances of institutional change I was observing as an ‘orchestrated social movement’ (Boland, 2012; Strang & Jung, 2005) in which institutional insiders orchestrate mass mobilization to create institutional change. As my theorizing progressed, however, I realized that the instances of institutional change I was observing originated from ‘outsiders’ as much as from ‘insiders’. I also came to believe that setting outsiders against insiders was an entirely perspectival exercise. The question became ‘outside what?’ Although the distinction between insiders and outsiders may be relevant in a homogenous social field with a clear and single power structure (e.g., Strang & Jung, 2005), it is far less relevant in a complex, fragmented social field such as the city of Cleveland. From the perspective of a resident of the community of Hough, for example, the powerful businesspeople that dominated Cleveland’s economic landscape were clearly outsiders.

A similar theoretical shift occurred in my understanding of boundaries between institutional fields. Despite the fragmentation of the broader institutional field, boundaries between constituent sub-fields were hazy at best and at worst false abstractions that my informants considered a contrived academic imposition on a much more dynamic, complex social reality. As such my basic theoretical
frames shifted away from a focus on boundaries, insiders, outsiders, and the difference between intra- and extra-institutional action. The theoretical perspectives on the reified separations of endogenous and exogenous, structure and agency, stability and change that I described above were largely developed through the interaction between theoretical exploration and reflection, and my empirical work in Cleveland.

**Iterative theory development**

I used an iterative form of theory development appropriate to creating novel theory in relatively unexplored fields (Eisenhardt, 1989). I iterated frequently between data collection, analysis, reviewing extant theory, and novel theorization. As I collected data, I coded this data and noted observations that appeared theoretically salient. A typical cycle in this analytical iteration would begin with organizing particular captions from my interviews, observations, archival analyses and memos into rough first-order categories in a mind-mapping program (FreeMind) that allowed me to easily move individual pieces of data between levels of organization. I would then attempt to capture the emerging theory in a roughly sketched model or in reference to existing literature (see figure 2 for an early sketch that was within the ‘orchestrated movements’ framing). As the process of data collection and theorization continued, it often became clear that the current model was unable to account for emerging data. As such, the categories to which I assigned individual pieces of data were reorganized until I was able to account for the data that I considered theoretically salient.
For example, I originally categorized the quote “The more politicians talk it up, the easier it gets” within the category ‘orchestration’. However as I collected more data it became clear that there was a process by which institutional entrepreneurs’ individual efforts benefited from the field-level effort that was not only driven by elites, but by distributed actors from throughout the field. As this became evident, I reorganized many of the data points that were originally evidence of the resource dimension of orchestration into a category that became called ‘beneficial partaking’ (see figure 3 for an example of this categorization of individual pieces of data). Overall, this process of collection and constant iteration, theorization, and re-categorization of codes resulted in what is presented here.

THE PRACTICAL PARADOX OF EMBEDDEDNESS

The first question I sought to answer was how actors experienced their institutional embeddedness. As social actors in Cleveland attempted to create, destroy, and shift institutions, they encountered and described how their own embeddedness posed challenges to these attempts at institutional change. Below I
describe three areas in which institutional entrepreneurs found themselves struggling to overcome their embeddedness in their own social position in Cleveland’s fragmented institutional field.

**Alternate Transportation**

“*Maybe [this] represents a chance for the City to escape itself.*” – ‘Jane’

For years, cycling activists in Cleveland had been attempting to persuade the Ohio Department of Transportation to allocate funding to bike lanes, and to persuade the City to include alternate forms of transportation in city plans. Two biking advocacy organizations represented cyclists in Cleveland, but competed amongst themselves for very limited resources and political capital. For years they remained peripheral, attempting to recruit Board members and develop partnerships that would provide legitimacy, but making very few inroads into the core institutions that dominated the Cleveland landscape. Biking activists were constantly struggling to move from being perceived as a fringe interest group to having influence in planning decisions.

At the same time, many of the most senior City officials wanted to shift toward more bike-friendly planning. However these officials were facing a constraint that was the mirror opposite of that faced by the biking activists. Despite interest on the part of the head planner, the Mayor, and members of the cabinet in establishing more bike transportation corridors, the City government was constrained by its need to maintain legitimacy vis-à-vis a number of constituents. As one member of the City cabinet described in an interview, the
Mayor “couldn’t speak publicly [in favor of establishing bike transportation corridors] because he had already signed an agreement to accept ODOT [Ohio Department of Transportation] funds. [There were] all kinds of reasons why the Mayor couldn’t be that voice.” The nature of the City’s institutional position prevented it not only from speaking publicly in favor of enhancing the bike transportation infrastructure in Cleveland, but also from engaging in the tactics typically used by activists. The City feared a loss of legitimacy should it support protests and rallies of cyclists. The City planner had said to a leader of an activist organization, “We need you guys pushing us.” Both activists and the City were constrained within their respective social positions. The activists were constrained by their lack of resources and legitimacy, and the City was constrained by its dependence upon existing resources and legitimacy.

**Poverty Reduction**

A similar dynamic of embeddedness faced actors attempting institutional change in the area of poverty reduction. One activist, Martha, served as an organizer for various community groups and was an advocate for her largely poor, often unemployed constituents in the community of Fairfax. As we spoke in the basement office of a public housing facility, she described her community’s deep estrangement from what she perceived were the dominant institutions in Cleveland. She said that this estrangement was “because of the way this city started,” describing the historically influential families - “the Mandels, Millers, Ratners” - that she argued continued to enforce “layers of control, because the
politics end up running the people, and they get the businesses too.” This created a feeling of being stuck in one’s class, community, and race, as the City “Invests in schools, but [there is] no room to move up to the top of the ladder… So someone like me has to show up… But I have to show up more as the glue than as someone in charge, because they’ll just squelch me… and I say ‘they’ because it’s a system of money.” Martha found it difficult to gain support for her work because – although she had a great deal of influence in her own community – she was not able to gain power in the broader set of institutions that could support her institutional change efforts. As a result she was confined to attempting small, isolated efforts within her community with little outside support.

However beyond her community, there was a great deal of interest in achieving the same objectives, often amongst the very people and institutions from whom she felt excluded. The Cleveland Foundation, a major charitable foundation in the city with extensive networks of influence and access to resources, was focused on community development and poverty reduction – precisely what Martha was advocating. Major businesses were also struggling to find ways to address the extreme poverty and accompanying social ills that had come to stain Cleveland’s reputation and affect their own ability to attract talent. However, the very communities they were trying to help perceived these organizations as being a part of the “system of money” that Martha described. Martha spoke of one such person who was raised in Fairfax, had become relatively successful, and was now a member of a highly selective citywide leadership and community service group. Highlighting the tension between
maintaining influence amongst both the community he had come from and the network he had joined, she said:

"He can't get too involved with the grassroots because he's trying to keep things connected at a whole other level. If he's in the elevator with Grandma Sue, he might not have much to say to Grandma Sue."

Local Food

Cleveland’s institutional entrepreneurs also experienced a high degree of embeddedness in attempting to encourage local food production. Growing food within urban communities has been a rapidly growing practice in many American cities, and is seen as a source both of regeneration and employment especially in abandoned areas of major cities. However a number of challenges faced Cleveland’s local food entrepreneurs. First, historical events, such as the burning Cuyahoga River, and contemporary realities, such as the industrial contamination in much of the city’s unused land, were often led to a wholesale dismissal of the city’s ecological assets. These perceptions were particularly prevalent amongst economically privileged groups for whom the blighted areas were off-limit sites of social, economic, and environmental decay. Real problems with soil contamination on former industrial sites were exaggerated as elites’ views of economically and socially peripheral communities contaminated their own perceptions of what was possible in these areas.

This cognitive embeddedness had very material effects. For example, group of institutional entrepreneurs from relatively privileged backgrounds had, with the
intention of helping those in poverty, built an urban farm in an economically
disadvantaged community. To protect the farm from what they perceived as the
social challenges in the area, they built a fence around it, only to discover some
months later – after a great deal of work planting and maintaining the farm - many
of their plants uprooted. They responded by installing security cameras, which
showed a local group of teenagers arming themselves with root vegetables for
their games of imaginary swordplay. The farm was closed.

Mansfield Frazier, a local food entrepreneur and activist, took a very different
view. Frazier grew up and still lived in Hough, a community with a poverty rate
of 42%, median household income of $13,799 (City-Data, 2010), and a history of
racial conflict. An ex-convict and community activist, he started “The Vineyards
of Chateau Hough.” Located on an abandoned plot of land in an urban
neighborhood, Chateau Hough was an express intervention in precisely those
perceptions of urban blight that characterized economically privileged actors’
interactions with such communities.

“If I started the ‘Vineyards of Chateau Lakewood’ or the ‘Vineyards of
Chateau Solon’, no one would blink an eye,” said Mansfield, referring to
two middle class suburbs, “But I called it the Vineyards of Chateau
Hough, because the ground under our feet is just as productive as the
ground under anyone’s feet, and we care about our community as much as
anyone cares about their community... When you said Hough, you thought
of the riots. This was a way of changing that thinking.”
Describing other local food entrepreneurs who had come from outside the communities they were trying to serve, he said, "If you wanted to put a fence around, don't move here… Every neighborhood has that group of kids who cause trouble, and so do we - I just hired them all.” Economically privileged actors were embedded in their privilege and the perceptions of social dysfunction that characterized their stance towards certain communities. These views colored their actions as they built literal fences between their efforts and the surrounding communities, compromising their success.

However embeddedness in one’s social position did not just constrain institutional entrepreneurs from outside such neighborhoods, but those inside them as well. Aside from the lack of resources and influence to support their efforts at creating networks of local food production, these institutional entrepreneurs confronted a lack of knowledge amongst their constituents. Many people from within economically disadvantaged communities were embedded not within the perception that their land or labor was unproductive, but within a general lack of knowledge of why or how to produce food. Widespread economic stagnation had created ‘food deserts’ in which it was difficult to access fresh, healthy produce because of the absence of grocery stores. As diets became based primarily on fast or prepared food, knowledge of how to cook - much less grow - fresh produce began to decline. Even basic knowledge of certain varieties of fruits and vegetables became uncommon in some communities. This lack of knowledge suppressed demand for the products of local farms as potential
consumers did not know how to identify or prepare the zucchinis, tomatoes, beans, and other produce that did not come packaged and prepared.

**No Escape**

The above descriptions of institutional entrepreneurs’ subjective experiences of being embedded within the constraints of their own social positions in the institutional field show that embeddedness can take many forms. The City was constrained by its legitimacy and the biking activists were constrained by their lack of legitimacy. Martha was constrained by her peripherality vis-à-vis the networks of power and influence, while the wealthy foundations and businesses were constrained precisely by their centrality in these same networks. And the economically privileged local food entrepreneurs were constrained by the cognitive frames that structured their action towards economically disadvantaged communities, whereas these communities were constrained by their history of poverty and the resulting lack of access to fresh food. The practical paradox of institutional embeddedness manifested itself across coercive, normative, and cognitive institutional forces (DiMaggio & Powell, 1983). Actors faced not an abstract paradox of institutional embeddedness, but practical paradoxes of power, knowledge, and legitimacy.

What was apparent in examining attempts at institutional change in Cleveland was that actors were constrained regardless of what position they occupied in the institutional field. Institutional entrepreneurs were constrained not only because of their lack of power or privilege or knowledge, but indeed by the power,
privilege, or knowledge itself. There was no ideal standpoint, no high hill from which institutional change could be easily achieved. This is not to say that there were not relative differences in ability to effect institutional change. Indeed, the City had significantly more formal authority to influence planning decisions than the biking activists. But these cases of institutional entrepreneurs struggling regardless of their social position highlight the constraint that this power itself puts on its possessor. Cleveland was thus populated by institutional entrepreneurs with shared change objectives but embedded in the constraints of their own social position, and separated by the city’s social, economic, and physical fragmentation.

COLLABORATIVE PATHS TO OVERCOMING EMBEDDEDNESS

Institutional entrepreneurs had thus to answer the question of how to overcome their own institutional embeddedness. Many attempts at institutional change were unsuccessful. However other institutional entrepreneurs did overcome the constraints of an embedded, fragmented field to create significant change. Despite the ecological and institutional legacies of industrial contamination, Cleveland became one of the largest local food producers in the United States as City ordinances and regulations were passed, major institutional resources were reallocated, and local food entrepreneurs mobilized. Bike lanes complemented roads as the City passed a ‘complete and green streets’ ordinance and millions of dollars in funding was secured from government and the private sector. In the former home of the Rockefellers and Standard Oil, policies were changed such that consumers could opt to consume renewable energy at price
parity with energy from conventional sources. Laws, regulations, mindsets, and even the physical structure of the city began to transform in an array of sometimes minor and sometimes significant ways.

These cases of institutional entrepreneurship that produced the intended outcomes demonstrated processes by which institutional entrepreneurs overcame their own institutional embeddedness. Throughout all of these cases, collaboration between actors in different social positions was a central approach by which institutional entrepreneurs worked to overcome the paradoxes of their embeddedness. Collaboration integrated the legitimacy of actors in central social positions with the normative freedom of actors in more peripheral social positions. Collaboration integrated the resources of the City Government and major businesses with activists’ incentive to disrupt existing institutions. And collaboration integrated the contextualized knowledge of members of communities such as Hough and Kinsman with the technical knowledge of experts in economics and urban agriculture.

Institutional entrepreneurs thus confronted their embeddedness, were aware of this embeddedness, and consciously or tacitly attempted to overcome the paradoxes they faced in the areas of legitimacy, power, and knowledge by creating collaborations that integrated the capabilities of actors from different positions in the institutional field. These collaborations took a variety of forms. The first form attempted to suspend institutional constraints by creating a context in which the co-presence of actors from multiple social positions reduced the dominance of any given field. The second form of collaboration coordinated
independent action across institutional fields such that agents could align their purposes while taking advantage of the institutional features of their particular social position. Third, agents created varying degrees of organizational interlocks, forming hybrid organizations (Battilana & Dorado, 2010; Jay, 2013; Thornton & Ocasio, 2008) that were exposed to the logics and institutions of different structural regions. Figure 4 illustrates these three forms.

Insert Figure 4 about here

Suspend by Constructing Liminality

The Cleveland 2019 effort was initiated by the summit in 2009. Despite physically taking place in Cleveland’s grand public auditorium, built near the height of the city’s prosperity, the social and institutional space that the summit occupied was outside extant institutional structures. The inaugural 2009 summit brought together actors from a vast diversity of social positions in Cleveland in a context that did not allow dominance by any one set of institutions. The presence of dozens of schoolchildren alongside CEOs, politicians, and community activists prevented the norms, power structures, and ideas of any one of these groups from becoming predominant. Organizers intentionally omitted organizational affiliations and titles from nametags. As one member of the Mayor’s cabinet explained, “The nametags would say ‘Joe Smith’, not ‘Joe Smith, CEO of Key Bank’, so that we could create relationships without status.” The format and
agenda were also structured to suspend typical relationships based on hierarchy or status. One participant described introductions in a small-group conversation:

“This is Sally, she’s furious that ABC Development Corporation has been so negligent in developing the waterfront area.”

“This is Joe, CEO of ABC Development Corporation.”

Despite Sally’s initial embarrassment, this conversation and others like it operated outside of the social networks, norms, and status hierarchies that would typically have governed Sally, Joe, and the interaction between them. Another participant described how it was difficult to identify typical signals for evaluating social status, “…other than race, and maybe how someone dresses… so you can build a relationship, before even introducing those other societal barriers.” The suspension of structure was evident as executives took directions from high school youth, as people from marginalized communities led discussions that included CEOs, and as collaborations formed between parties that would otherwise have been separated by wide economic, social, and geographic distance. Through creating such a space in which people from multiple social positions interacted on equal footing, the Mayor was able to create opportunities for sustained collaboration between businesses and non-profits, community organizations governments, and other parties that would otherwise have been separated by their respective location in Cleveland’s fragmented institutional field. These collaborations provided the nexus through which actors overcame their embeddedness.
Many of the successful attempts at institutional change issued, directly or indirectly, from the summits. The cycling activist groups that had formerly been competing amongst themselves for resources and legitimacy began working together and formed partnerships with the City and a number of private sector funders at a summit. A number of organizations that had formerly been working in an isolated manner in Cleveland’s fragmented social landscape found access to networks and funding at the summit. One employee at a community development corporation said, “Half the reason I go now [to a summit] is that it’s fun to see who’s there… I get a lot out of it, make lots of contacts.” An executive director of a small community arts organization explained that she had been able to secure funding for her organization because of her participation in the summit, saying, “Really I would have no entre to this world without Sustainable Cleveland… there’s no question I wouldn’t be in a room with these people ever.”

This summit was a pivotal moment of collaboration across institutional fields, and an important example of a created space that allowed for the suspension of institutional constraints. Institutional entrepreneurs intentionally created a shared space within which the structural constraints that had long characterized actors from various social positions within Cleveland could be momentarily suspended, creating an opening for a wider variety of thoughts, actions, and interactions. The very participation of people from such diverse structural regions within the city created a temporary overlap of so many institutional fields such that embedded institutions were suspended and a greater freedom of action was attained. And this co-presence of multiple actors with multiple social positions occurred within
a unique context, further dislodging individuals from their ‘habitus’ (Bourdieu, 1977).

This suspension of embeddedness in a temporary space apart from typical social structures recalls the ethnographic concept of liminality (Turner, 1969; Van Gennep, 1960). Liminality refers to transition points in which conventional structures dissipate as one stands at or straddles a threshold. These transition points can be temporal - as in transitions between major life stages - spatial - as in the physical boundary of a ritual - psychological - as in altered states of consciousness or psychological transition - or social - as in the boundary of or overlap between communities. Liminality can create greater freedom of action, fluidity, and possibility, creating “a tabula rasa, through the removal of previously taken-for-granted forms and limits” (Szakolczai 2009, 148).

The social actors who initiated the summits were aware of the need to create such a liminal space in which the interaction of individuals from multiple structural regions characterized by different structural principles and features would disrupt the hegemony of any particular one. One of the leading actors initiating this effort said he “felt bad putting the CEO in the back corner of the room, but it didn’t matter.” He described their intent to create a space where, as much as possible, typical social rules did not prevail. By creating such a liminal space where social roles and relationships were suspended these institutional entrepreneurs consciously created the “experience of contradictory institutional arrangements [that] is likely to trigger actors’ reflective capacity, enabling them to take some critical distance from existing institutional arrangements” (Battilana et
al., 2009, 75). And by doing so while convening so many different actors from such different structural regions, these institutional entrepreneurs used the power of convening to “generate change in what Trist (1983) labels problem domains - i.e. Organizational fields defined by problems too many-sided and complex for any one single individual or organization to handle.” (Dorado, 2005, 386).

Prior literature has discussed ‘free spaces’ (e.g., Gamson, 1996), however the ability of the spaces observed in Cleveland to overcome the institutional embeddedness of actors did not issue primarily from their being public or private, or from particular relational dynamics, although these were necessary conditions. The central disruptive force that allowed for the suspension of existing institutions was their structural liminality. By convening actors in settings in which no single set of institutions predominated, institutional entrepreneurs were able to, even momentarily, suspend their embeddedness.

Circumvent by Coordinating Independent Action

Liminal spaces provided critical moments of structural suspension that allowed social actors to behave and interact in ways that would typically not be possible while embedded within their own position in the fragmented institutional field. However institutional change required more ongoing interaction between actors from different positions than annual summits could achieve on their own. Recognizing, for example, that they could not both maintain the legitimacy upon which they depended and engage in actions such as protests, lobbying the state government, or initiating lawsuits against service-providers, the City began more
ongoing – if highly informal and decentralized – collaborations with a variety of institutional entrepreneurs.

At the 2009 summit, a number of biking activists joined representatives of the local government, major businesses, and other community leaders to form an informal group they called the Sustainable Transportation Action Team. While activist members of this group expressed a tension between working with government agencies and acting as an advocate, one explained that “When you think advocacy you think a bunch of hippies causing trouble, but personally I try and be a lot more collaborative. You can do a lot more working with the City than against.”

Beyond the summit, this informal group began acting as an organizing platform for institutional entrepreneurs that had a shared interest in similar outcomes, but could not always pursue similar tactics. For example, individuals within the city were legally and politically constrained in their ability to lobby the Ohio Department of Transportation (ODOT) to fund a bike lane on a major bridge used by commuters to enter the city. Their existing requests for road funding had exhausted their political and institutional capital, and they could not be seen as compromising these major requests for the apparently fringe objective of installing a bike lane. Instead, they worked informally with the activist group, providing financial resources and detailed planning information such that the activist group could construct a sophisticated, informed proposal. While benefiting from this access to inside information, the activist group also used their outsider status to mobilize a large “Access for All” event at the city’s baseball
stadium. A leading activist explained that “We were loud enough and got enough communications support, and there was also a lawsuit filed against ODOT.” This mass mobilization and legal action would have been difficult if not impossible for the city to initiate, but would also have been difficult if not impossible for the activists to conduct without the resources and information provided by their collaboration with the city.

The campaign resulted in $7 million in funding for the successful installation of the bike lane. Since this early victory, bike activists have been involved in policy development for a “complete and green streets” policy which mandated that 20% of road construction spending would be dedicated towards sustainable transportation (implemented by City ordinance in 2011). In the ten-year period between 2000 and 2010, the share of commuters cycling to work has increased three-fold, and although it still represents a very small fraction of the total, the basic institutions that govern transportation in the city of Cleveland are shifting from being exclusively car-focused to including other forms of transportation in their planning, funding, and policy-making.

**Tilting the institutional field**

In some cases, the coordination that occurred between institutional entrepreneurs was even less explicit. By convening actors from across the city, facilitating the creation of an overarching vision for ‘Cleveland as a Green City on a Blue Lake’, and working to align major businesses and institutions behind the effort, the Mayor tilted the institutional field to be conducive to independent actors pursuing aligned change objectives. The development of the local food
industry benefited substantially from this broad alignment and coordination across the institutional field. Major organizations - such as the Cleveland Clinic and the Cleveland Public Library system - aligned their social responsibility priorities each year to the annual priorities of the Cleveland 2019 initiative. During the ‘year of local food’, this resulted in some of the region’s largest consumers shifting their purchasing criteria. For example, the largest contractor for food services in the area committed to paying an 8-10% premium for locally sourced food. Community organizations in neighborhoods across the city held events highlighting local food, resulting in increased consumer demand. Mansfield, the founder of the Vineyards of Chateau Hough, said simply that “The more politicians talk it up, the easier it gets.”

In addition to supporting institutional entrepreneurs in areas such as local food and sustainability that were focuses of Cleveland 2019, this broad coordination also affected actors who were pursuing different objectives. As businesses, policymakers, consumers, and foundations became increasingly aligned around the Cleveland 2019 priorities, other actors felt an incentive to connect with the effort. Resources, for example, were distributed by major foundations to organizations who were involved in what was seen as an important citywide effort. A granting officer with the Cleveland Foundation said that when making decisions between grant applicants, “It helps to know that they’re part of a broader network and the broader movement.” One manager of an arts organization decided the best way to ensure her organization's survival was to
connect her priorities with those of Cleveland 2019, “This year is local food and sustainable energy, and I’m working on both of these at the arts center.”

Dorado (2005) describes a ‘partaking’ form of institutional change in which individual actions of often unaware agents create a drift towards an eventually divergent institutional change. In Cleveland, institutional entrepreneurs created a context in which partaking in the objectives of Cleveland 2019 was beneficial to individual actors. This occurred explicitly in the case of the City working with biking activists, and at a social distance in the case of individual organizations aligning their priorities to those of Cleveland 2019 in order to secure funding. Both forms of coordination, however, made “the autonomous actions of countless agents converge over time” (Dorado, 2005, p. 400). Unlike Dorado’s formulation of partaking institutional change, however, this was not a structural drift that occurred outside the awareness of institutional entrepreneurs. Instead it was a conscious effort at creating common visions, priorities, and organizing infrastructure that allowed the actions of agents from otherwise very different social positions to be coordinated. By tilting the institutional field to coordinate independent action, institutional entrepreneurs in Cleveland circumvented the barriers that would face any given major institutional change. Both lawsuits against the Ohio Department of Transportation and sophisticated, funded policy development could occur at the same time. Both significant resource investment from major foundation and businesses and a grassroots emergence of dozens of local farms in neighborhoods across the city. The embeddedness any one agent may have experienced acting independently
from their social position was circumvented as the actions of agents from across the institutional field became mutually reinforcing.

**Low control leadership**

This tilting of the institutional field was both structured by certain institutional entrepreneurs, but also highly decentralized. This lack of capture of these various coordinated efforts by any one organization or individual allowed individual organizations and individuals to associate with the effort in ways that would not compromise legitimacy from their own position in the institutional field. Interviewees repeatedly stressed the important and yet unusual role the Mayor played in initiating and leading the change effort. One interview described Mayor Jackson as “the anti-politician… sometimes he walks into a meeting, sits at the back of the room, and people don’t even notice he’s there.” Another stressed the importance of the Mayor’s humility, saying, “We really need that type of style, [people] can’t think the City’s doing everything.” In setting a change process in motion that required a wide number of parties to coordinate independent action across typical organizational boundaries, this humble, hands-off leadership style was critical. The Mayor’s office took the role of convening diverse parties, orchestrating independent efforts, and orchestrating the effort without controlling it. He even prevented himself and City Councilors from politically using and benefiting from the effort in an election season, believing that if it became perceived too strongly as a city effort, its ability to enlist a wide variety of participants and outlast election cycles would be compromised. The Mayor, who grew up in the Kinsman neighborhood, was heard to have summarized this
approach, saying, “Where I come from, you put your stuff out there too much, people will steal your shit.”

**Configure by Hybridity in Joint Action**

Liminality created an initial suspension in embeddedness, and tilting the institutional field allowed for coordination of independent action. However as the effort progressed, institutional entrepreneurs perceived a need for more ongoing and formalized integration of the capabilities and perspectives of actors from different social positions. The third form of overcoming institutional embeddedness attempted to create an organizational foundation for these collaborations.

Kinsman - known as the ‘forgotten triangle’ because of the extent of abandonment in the middle of the city - was one of the epicenters of post-industrial decline. Formerly full of warehouses and industrial facilities and the site of an eclectic and relatively prosperous residential community, as of the 2010 census 57% of residents were under the poverty line and the median annual household income was $8,641 (City-Data, 2010). Institutional entrepreneurs seeking to fundamentally reshape the economic profile and perception of Kinsman began by changing the economic and urban planning approach to the region. Through a serious of community meetings, Kinsman residents expressed their desire to maintain “its quiet, rural nature”. However initial attempts at ecologically oriented community development were abandoned because of a lack of capital. At the same time, a set of entrepreneurs noted the available and
inexpensive land and began to invest in an urban farm. Three former residents of a community similar to Kinsman - an owner of an eponymous extermination firm, an economic development activist, and a Vice President of a major coatings firm – partnered to create the “Rid-All Green Partnership”, an urban farm. This hybrid organization (Battilana & Dorado, 2010; Jay, 2013) integrated economic development, ecological sustainability, and profit logics. Entrepreneurs collaborated with community residents who identified which vegetables were desired in the community; with a local university to create a training program for commercial gardeners in the neighborhood; and with a community development corporation to build a facility that would host a cafeteria, a small shop to sell produce, and cooking classes so community members could learn what to do with the produce. A leader of the effort described his role as follows: “There are a lot of silos people work in, there’s not a lot of communication between them… a lot of our work is trying to get into these silos.”

To supplement the initial Rid-All Green Partnership farm, an “Urban Agriculture Innovation Zone” was created to create scale in local food production and better achieve all of the economic, ecological, and commercial objectives. The Kinsman Eco District now has approximately 30 acres of agricultural land, a local community center including a cafeteria selling fresh produce and a training facility for the local community to learn how to cook fresh produce. This makes it one of, if not the largest urban agricultural district in the United States (Taylor, 2010), and the center of a network of hybrid organizations with similar configurations of commercial, ecological, and economic development objectives.
As local food production increased, major institutions were able to buy local produce at scale, and thus integrate ecological considerations into their purchasing priorities. A regional manager of a major food supplier described the benefits of being able to do so:

“There is an eight to ten percent cost increase in dealing primarily with local farmers, but what you get for that eight to ten percent is so satisfying... We just think it’s the right thing to do.”

There were cascading effects of the adoption of these priorities. During my interview with two executives of this food supplier, which was held at a restaurant managed by the company, the restaurant manager came over to our table. She had organized a local high school in her community – Fairfax - to create their own urban farm. She mentioned that as they grew their operation their existing tiller was no longer sufficient, and asked if the executives could provide an additional, newer tiller. They, agreed, and arranged the purchase of the tiller. As she thanked them and walked away, the financial controller spoke of his involvement with the organization’s local food suppliers, saying, “They got me into gardening.”

By incorporating social and environmental logics into their operation, this organization’s hybridity had an effect on the broader availability of local food in Cleveland, as resources were channeled to local food producers that would otherwise not have the capability to create operations at sufficient scale. But this transfer of resources to community farms was returned by the lowered costs of acquiring local produce, and the enhanced customer value that local food
offerings provided the company. The hybridity allowed community members in places such as Fairfax, Hough, and Kinsman to overcome at least some of the embeddedness of their resource constraints, but also allowed a well-established company to overcome their own embeddedness in an established system of food production and distribution.

Hybrid organizations in other organizations were formed as part of the overall institutional change effort in Cleveland. These included everything from small, for-profit urban farms to a large initiative to install freshwater wind turbines on Lake Erie. Existing organizations, through their participation in the effort, also adopted priorities that were distinct from their established commercial objectives. While liminality had a temporary effect of suspending institutions and coordination of independent action aligned the efforts of multiple, often dispersed institutional entrepreneurs, hybridity configured the capabilities of multiple structural principles and properties in ongoing organizational forms. This form of overcoming institutional embeddedness lies at the opposite end of the spectrum of active collaboration from constructing liminal spaces, as it requires sustained and often formalized interaction individuals and institutional features of different regions of the institutional field. By creating hybrid organizations or other collaborating units, institutional entrepreneurs intentionally created configurations of institutions that combined the unique capabilities of different logics and actors from across the institutional field.

Research on hybrid organizations has focused primarily on how organizations and the individuals within them manage the tensions that exist once the hybrid has
been established and focus on the tensions between logics instead of the capabilities and freedom of action that such hybridity affords. The examples in Cleveland show how institutional entrepreneurs can intentionally construct such organizational forms to overcome their embeddedness in particular institutional logics. And these examples also show how hybridity can be conceived of not only as tension between logics that require managing, but as a configuration of institutional capabilities that allow actors to draw upon the norms, power, and interpretative frames from institutional regions. This is a level of agentic knowledgeability that has not been emphasized in prior literature on hybridity, which has been obscured by the emphasis on reconciling tension instead of configuring capabilities.

**DISCUSSION**

The above study was designed to generate theory of how agents experience and overcome their institutional embeddedness. It showed that social actors experience the paradox of embeddedness as paradoxes of power, legitimacy, and knowledge. Institutional entrepreneurs within the Cleveland 2019 movement used a variety of collaborative paths to overcome this embeddedness: suspending institutions by constructing liminal spaces, circumventing institutions by coordinating independent action, and configuring institutions by creating hybridity in joint action.

This study shows that social actors use collaboration to overcome their embeddedness, and illustrates how they overcome existing institutions, but has a
number of limitations. Cleveland 2019 was one particular context in which a variety of institutional changes occurred and is subject to a variety of particularities. However the case of Cleveland is a special one. The use of a particularly positively oriented theory of change (Cooperrider & Srivastva, 1987), the multifaceted, overlapping nature of the structural fields in Cleveland, and the methodological limitations of the single case method may mean that the centrality of collaborative approaches is specific to this context. Future studies should explore the boundary conditions for the forms of collaboration and mechanisms described here. In what contexts are they used? In what contexts do they succeed in achieving the intended institutional change? More systematic, large-sample studies would help address these limitations. However the theories developed and the empirical data in this study points to the agentic perspective on institutional embeddedness, the centrality of collaboration, and the collaborative approaches institutional entrepreneurs use to overcome their embeddedness. This study thus has a number of important implications for our understanding of the paradox of embedded agency.

**Reframing the Paradox**

The first contribution of this study is to reframe the paradox of embedded agency. Previous formulations have described the paradox of endogenous change occurring from within an institutional field. This study suggests that the implicit reification of social structure within institutional theory creates a false paradox, by creating an inaccurate ontological distinction between the ‘inside’ and the
‘outside’ of institutional fields and by inaccurately setting agency against structure. By recognizing the mutual constitution of structure and agency and by being mindful of the distinction between analytically useful and ontologically accurate constructs, we adopt a perspective from which endogenous change in institutional fields is no longer paradoxical. But this exact same theoretical position redirects attention to the agentic perspective on the paradox of embedded agency. Even if, ontologically, there is no such theoretical conundrum, social actors - who are subjectively embedded within institutional fields - face the practical form of this paradox as they attempt institutional change.

The Cleveland 2019 effort showed how agents subjectively encountered their embeddedness. They experienced paradoxes of legitimacy, power, and knowledge. The paradox of legitimacy describes the tension between those who have broader legitimacy but whose actions are constrained by their dependence on this legitimacy, and those who have freedom of action but do not command the legitimacy necessary to support or scale such action. The paradox of power describes the tension between those who have the power to create change but no structural incentive to do so, and those who have the incentive to create change but little power. And the paradox of knowledge described the tension between those who had the technical or systemic knowledge to create or scale change, but lacked the subjective, contextualized knowledge of particular communities, and those who had this subjective of context but lacked the outside perspective required to address these subjective issues.
These three paradoxes reframe the paradox of institutional embeddedness as a subjective phenomenon faced by social actors, and provide an outline as to how this paradox is experienced. Future research can explore in far greater detail the variety of specific elements that constitute this paradox for actors in each of these domains. The paradox of power, for example, may be constituted by a wide variety of forms of power and peripherality, each of which may have different effects on how actors interpret their situations and engage in institutional change. Do actors who find themselves in possession of resources directly, but without the ability to authorize resource-distribution for others (e.g., corporations, wealthy individuals) act differently to overcome this aspect of their embeddedness than actors who are without resources directly but can authorize their distribution (e.g., municipal governments, elected officials)?

**Not all Conflict, Not all Collaboration**

The study also shows the centrality of collaboration in overcoming these subjective experiences of the paradox of institutional embeddedness. By replacing social theories that reify structure and assume continuity in the absence of conflict with social theories that show that structure and agency are mutually constitutive and that change is inherent in social life and that boundaries are contingent constructions not objective features of the social world, the assumption that change requires conflict is overcome. This has important implications for a number of areas of theory in the fields of institutional entrepreneurship. First, it shows that institutional entrepreneurs use collaboration to overcome their own
practical paradoxes of institutional embeddedness. They also show use of liminality, coordination of independent action, and hybridity to overcome both the movement organizations’ and the targets’ embeddedness in their respective social position.

In these cases collaboration creates change through mechanisms other than by creating the alliances of actors who will then be rallied in subsequent conflicts, as often emphasized where collaboration and collective action has been addressed in prior literature (Battilana et al., 2009). Instead, collaboration is itself the means by which institutional change occurs. Collaboration suspends institutions through liminality, circumvents institutions through coordinating independent action, and configures institutions through hybridity. Such a view of the role of collaboration should reframe studies of collective action in institutional entrepreneurship. Our views of collective action should be broadened from a focus on alliance-formation in preparation for subsequent conflict, to including the effects that the collaboration itself has on institutional continuity and change. Future research should further explore the variety of mechanisms by which collaboration creates change, in addition to the three identified in this study.

This is not to say that collaboration should replace conflict in our understanding of institutional change. A view that ignores the existence of conflict would be as unrealistic as one that ignores collaboration. Indeed conflict was not absent from the Cleveland 2019 effort, and some collaborative arrangements initiated by the City even subsequently turned upon their creator, protesting City-proposed initiatives. Much more research should be done in
understanding the agentic and structural conditions that predispose a change effort to collaboration versus contention. Researchers can ask what contextual conditions create a proclivity for the use of collaboration to create institutional change, and what acts and interpretations on the part of agents give rise to such approaches? Following this inductive work, more quantitative and large-sample studies could yield insight into these questions.

**Liminality, Coordination, Hybridity**

The three specific mechanisms by which agents used collaboration to overcome their institutional embeddedness are also theoretically and practically instructive. First, agents attempting institutional change create liminal spaces in which the co-presence of actors embedded within multiple social positions dislodges the prevalence of any one particular logic or set of institutional characteristics. This creates the possibility of novel content and novel forms of conversation, organization, and interaction, providing an opening for change. These liminal spaces, while similar to accounts of institutional change originating in the overlaps between institutional fields, are different in two important ways. First, they are not pre-existing structural characteristics but spaces created by agents. Temporally, these liminal spaces do not exist with continuity, but are created by agents attempting institutional change for discrete periods. And spatially, they do not exist at a structural overlap between fields but are entirely distinct spaces that include characteristics from multiple positions in the institutional field. Second, they involve the co-presence of so many structural
features that characterizing them as being embedded within any particular one would be inaccurate. Thus these liminal spaces are characterized by different norms, power structures, and interpretative schemas than any ‘naturally’ existing set of institutional characteristics.

The use of liminal spaces in institutional change suggests a number of fruitful avenues of research. First, this study only looked at one particular form of liminal space. Future studies should address the multiple manifestations of liminality that can be created to suspend institutions. By examining these multiple forms, we can identify characteristics that do and do not enable suspension of institutional constraints. This line of research suggests integration with a variety of fields including organizational development scholarship on large group interventions (Bunker, 2005), social movements scholarship on public spaces (Tarrow, 1994), and the original research on liminality in ethnography and anthropology (Turner, 1969; Van Gennep, 1960).

Second, institutional entrepreneurs coordinate independent action by actors situated in multiple social positions, in order to overcome the limitations incumbent upon any one actor, and take advantage of the capabilities afforded by different structural principles and properties. Through such coordination the City was able to take align the freedom of action afforded to activists, the resources at the command of corporations and foundations, and their own legislative and technical abilities to create change, without directly engaging in actions (e.g., lawsuits, protests, lobbying state governments) that were precluded given their own embeddedness. Studying coordination of independent action can inform
research on orchestrated social movements (Strang & Jung, 2005), and expand such research by showing instances of orchestration that had their provenance in agents other than the most powerful in an institutional field. It can also significantly expand the scope of research into free association structures, which has focused on such structures in use across similar actors instead of across different types of actors who are embedded in different social positions. Finally, observing agents intentionally tilting the institutional field shows the spectrum that exists between consciously pursued institutional entrepreneurship and ‘partaking’ (Dorado, 2005), which is often considered unconscious and unintended. A form of ‘beneficial partaking’ may exist in which the similar mechanisms of partaking or ‘accumulating’ institutional change are at work, but were intentionally initiated and structured by agents.

Third, institutional entrepreneurs intentionally configure hybrid forms to purposefully create the tensions and integration of capabilities that come from the combination of multiple institutional logics. Research has typically emphasized the tensions and struggles that characterize hybridity (e.g., Jay, 2013). By showing that institutional entrepreneurs intentionally construct hybrids so as to create configurations of institutional characteristics that can overcome institutional embeddedness, these studies provide an alternate perspective of the capabilities that hybrids afford. Future research into the use of hybridity to overcome institutional embeddedness can shine light on processes of hybrid creation, and the rationales that actors use in such cases.
Finally, this study did not fully explore the interaction between these three forms of collaboration to overcome institutional embeddedness. Although there was a general sequencing from liminal spaces to coordinating independent action to hybridity, these was hardly a rule even in the case of the Cleveland 2019 effort, and it is very possible that this order does not characterize other cases. Further research should explore both potential temporal sequencing and other forms of interaction between these three forms of collaboration. For example, do liminal spaces provide the necessary opening to allow coordination of independent action on the part of actors who would otherwise not collaborate? And does sustained coordination of independent action, over time, lead to the increased formation of hybrids?

**Capabilities Perspective on Social Position**

Agents’ intentional use of collaboration to achieve institutional change suggests a capabilities perspective on institutional fields. Actors recognize the ability of activist organizations to mobilize populations and fluidly engage in diverse tactics; the ability of individuals to have a tacit, aesthetic understanding of the social dynamics, needs, and preferences within their communities; and the ability of the City government to convene actors and legitimize efforts. These capabilities derive from the structural principles and features (Giddens, 1984) that govern a certain social position within the institutional field. Actors both contend and collaborate on the basis of the capabilities that their position affords, and this
capabilities view can inform our understanding of tactical choices in movements and the processes of institutional entrepreneurship.

More broadly, a capabilities view again overcomes the implicit association between structure and constraint, and between agency and change. Structural features create affordances as much as they limit action. Theories and metaphors of structure that describe it as a fixed ‘architecture’ within which agents act are inaccurate, and research should further explore the unique capabilities that various forms of structure afford various types of actors. Just as the capability view of the firm has yielded important insight into processes of industrial stability and change, the competitive and collaborative interaction between different firms, and behavior within firms, a capabilities view of structure can show how structural principles and features affect interaction between and within institutional fields.

By reframing the paradox of embedded agency, showing the prevalence of collaborative processes of overcoming this embeddedness, and creating a capabilities perspective on institutional fields the study of Cleveland 2019 contributes to our understanding of institutional change. By adopting new metaphors of social structure that avoid reification, emphasize communication between social positions instead of contestation of structural boundaries, and show the knowledgeability of agents instead of their entrapment in abstract power structures, we can build generative theory of institutional change (Gergen, 1994). Such theory will be populated by characters as much as conditions, and will articulate a variety of possibilities for action instead of building deterministic
models. Continuing research in this area will undoubtedly uncover an increasing diversity of approaches - beyond liminality, coordination, and hybridity - that actors can use to overcome their embeddedness in institutional structures. The consequence of such research will be a contribution to the underlying thrust of the social sciences - a transmutation of what seems inevitable, separate, and static into a view characterized by possibility, interdependence, and dynamism. We are not feckless, isolated individuals embedded in an objective social architecture, but are constantly creating, maintaining, and changing the structures of our social existence. The central social truth is neither unrestrained freedom nor unrelenting captivity, but a vast and consequential choice.
# TABLES AND FIGURES

## TABLE 1 - Cleveland 2019 Data Collected

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<th>Sub-category</th>
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</tr>
<tr>
<td></td>
<td>Other public meetings</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Working group meetings</td>
<td>5</td>
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<td>Academia</td>
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<tr>
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<tr>
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<td>Emails</td>
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<tr>
<td>Quantitative data</td>
<td>Census, public data</td>
<td>3</td>
</tr>
</tbody>
</table>
Figure 2
References


U.S. Department of Commerce (1973). *Characteristics of the population: Part 37, Ohio Section 1*.


Repertoires of Collaboration:

Collaborative disruption in the modern environmental movement

This study critiques prevalent social movements theory by developing empirical foundations for a 'repertoire of collaboration' to complement existing theory of the 'repertoire of contention.' A qualitative review of the modern environmental movement catalogs the collaborative tactics used by environmental movement organizations, showing that they provide instead of disrupt their targets’ access to resources; provide instead of withdraw their targets’ normative sanction; and blend instead of contest extant frames. Propositions are generated that contrast collaborative tactics with current social movements theory, suggesting expansions and revisions for political opportunity theory, resource mobilization theory, and theory of mobilizing frames.


“They openly declare that their ends can be attained only by the forcible overthrow of all existing social conditions.”

- Karl Marx, 1888

The intellectual origins of the study of social movements are deeply rooted in the notion that social progress occurs via conflict. Marx and Engels’ (1902) analysis of the relations between labor and capital gave rise to a dialectical view of history that attributed social change to contentious processes. The work of subsequent scholars and revolutionaries has been mostly variations on this underlying theme, shifting the emphasis but deviating little from the fundamental thesis that social change is produced by conflict. Lenin (1902) emphasized the importance of an elite, suggesting that an intellectual vanguard was necessary to mobilize and successfully defeat opponents. And Gramsci (1992), whose writings on power presaged the present work - emphasized the importance of cultural hegemony in both preventing and enabling working class mobilization, but maintained the underlying theory of change that mobilization was a process by which the marginalized contested the powerful in order to secure concessions. Social movement scholars have since studied movements that are far removed from the class conflicts of centuries past, but the central theories in the field have yet to fully detach themselves from the original metaphor of a battle between the powerful few and the marginalized, mobilized many. While the tactics that movements use have changed, movement theory remains in the shadow of Marx.
Such early work has informed much of the subsequent scholarship of social movements. However the underlying paradigm that movements achieve their objectives through successfully defeating their adversaries may have led to a form of path dependency in the field. The inertia of a focus on contention continues to delimit the phenomena we pay attention to, the theory we develop, and thus scholars’ and actors’ understanding of how social change can occur. Scholars’ emphasis on the contentious aspects of social movements and the inclusion of contention in many of the definitions of social movements constitutes a narrowing of scope that is not justified by either theory or phenomena. Empirically, non-contentious tactics are an intrinsic part of the set of mechanisms by which movements attain their objectives (e.g., King, 2008; O’Mahony & Bechky, 2008; Starik & Heuer, 2002). And theories of mass mobilization, political opportunity, mobilizing frames, resource-provision, and the variables included in such theories are better served by recognizing that the extent of contention in a movement is a variable, not a defining feature. The objective of this paper is to develop a theory of how social movements can achieve their objectives through collaborative processes.

To do so, I first review the range of definitions and typologies of social movements, showing that the use of contention should not delimit the phenomena studied as social movements. I then contrast this with the field’s habitual focus on contentious processes in development of social movement theory. I argue that extant theory does not accurately reflect the range of social movement behaviors. I then focus on a central concept in social movement theory - the ‘repertoire of
contention’ - and argue that just as Tarrow (1994) and Tilly (1993) described contentious repertoires as historically and contextually contingent, contention itself is also contingent. I conduct an empirical study of the tactics used by the modern American environmental movement, which suggests that we need to expand our vision of tactical repertoires from ‘repertoires of contention’ to include ‘repertoires of collaboration’. It shows that collective, extra-institutional action can achieve social change objectives through collaboration in addition to contention. This expansion of the implicit theory of change at use by social movement scholars and activists suggests revisions and expansions to a number of areas of social movement theory.

MOVEMENT DEFINITIONS

To argue for an expansion of social movement research to include collaboration, we must first show that social movements do not, by definition, focus solely on contention. The definition of ‘social movement’ has evolved, and remains the subject of some debate. Table 1 shows the component elements of some key definitions of ‘social movement’. It is apparent that most definitions do not suggest that contention is required for a phenomenon to be considered a movement. Even Snow, Soule, & Kriesi’s (2004) definition does not explicitly indicate contentious tactics, but only implies contention through their focus on “challenging or defending extant authority.” Social movements are defined not by their use of contention, but by their purposeful, collective, and potentially extra-institutional nature. Thus, instances of extra-institutional, purposeful
mobilization that do not necessarily challenge existing authorities, or that do not use contentious tactics, may still be considered social movements (e.g., Strang & Jung, 2005).

The use of contention is thus not central to definitions of social movements. The study of social movements explores how individuals act collectively to change social structures and conditions. It should be building theory on framing, resource-mobilization, tactics, political opportunity, and collective action regardless of their emotional tenor or choice of contentious tactics. But this habitual focus on contention has embedded itself within the vast majority of theorizing of social movements. By identifying where theories unnecessarily focus on contention to the exclusion of other forms of mobilization, we can develop more accurate and comprehensive theory and deepen understanding of how individuals act collectively in pursuit of social change.

AN ASSUMPTION OF CONTENTION

The above review of definitions makes it clear that when scholars reflect on the important constituent elements of movements, we do not equate movements with contention. However, theory of how movements achieve their objectives
focuses far more extensively on contentious tactics than non-contentious tactics. As other fields have found, researchers are not immune to the salience of the negative, which may unjustifiably focus the vast majority of scholarly attention on contentious processes (Seligman & Csikszentmihalyi, 2000; Baumeister, Bratslavsky, Finkenauer, & Vohs, 2001). This is anecdotally evident from the interchangeability of social movements with concepts such as contentious politics in studies and books on the topic (e.g., Meyer & Tarrow, 1998) and by the empirical focus and theoretical reviews of major movement publications. A JSTOR search of keywords ‘social movements’ and ‘contention’ yielded just over 150,000 results, while ‘social movements’ and ‘collaboration’ less than a third of that number. In “The Blackwell Companion to Social Movements” there are multiple chapters and numerous references to contention, without a single index entry for collaboration (Snow, Soule, & Kriesi, 2007).

Movement typologies demonstrate the extent to which scholars treat a contentious approach to social change as a constant. One core distinction is between ‘strategy’ (Touraine, 1981) or ‘instrumental’ (Kriesi, Duyvendak & Giugni, 1995; Rao, Monin, & Durand, 2003) movements that “pursue goals in the outside world” (Kriesi, Duyvendak & Giugni, 1995, pp.277), and ‘identity’ movements that are internally focused, pursuing objectives such as group cohesion and autonomy (Taylor & Whittier, 1992; Gamson, 1995; Melucci, 1996). However the use of contention is treated as a common element of both of these types of movements (e.g., Bernstein, 1997; Rao, Monin, & Durand, 2003; Turner and Killian, 1987).
Although it is far beyond the scope of this article to assess whether these proportions are representative of the actual tactics used by movements at a global scale and over the past decades of movement research, I do argue, as have other scholars (Hargrave & Van de Ven, 2006; O’Mahony & Bechky, 2008), that this represents an entirely inadequate treatment of an important social movement phenomenon. More important than this crude quantitative summary, however, is the extent to which a focus on contention pervades our theorizing about movements. In the following sections, I will review how contention has become central to some of the core social movement theories.

**Mobilizing grievances**

The question ‘what causes mobilization?’ is arguably the starting point for social movement theorization. An overwhelming body of research answers this question with variations on one word - ‘grievances’. Theoretical debate within the literature has been focused on what form of grievances causes mobilization, rarely challenging the basic assumption that grievances are the central motivating force (Snow & Benford, 1992; Snow & Benford, 1988). Scholars have attributed mobilization to inequality, disruption to daily routines, procedural injustice, precipitating events, and other factors (Snow & Soule, 2010; Buechler, 2004; Snow, Cress, Downey & Jones, 1998; Walsh, 1981). These theories are all premised upon the simple notion that it is through problematizing an extant social reality that agents cultivate the necessary motivation to mobilize action intended to ameliorate these conditions (Benford & Snow, 2000). Snow and Soule (2007, p23) exemplify this focus on a grievance theory of motivation:
“None of the various sets of conditions necessary for the emergence and operation of social movements is more important than the generation of deeply felt shared grievances.”

Zizek (2009, p89) translated this idea as ‘rage capital’:

“All successful socialist revolutions, from Cuba to Yugoslavia, followed the same model, seizing a local opportunity in an extreme and critical situation, co-opting the desire for national liberation or other forms of ‘rage capital.’”

In explicating the mechanisms by which grievances manifest in action, scholars suggest that actors construct grievances in interaction with objective social conditions, form diagnoses of these grievances, prognoses suggesting action, and then begin to mobilize (Benford & Snow, 2000). Hargrave and Van de Ven (2006) characterize this process as follows:

“According to Benford and Snow (2000), framing involves three core tasks: (1) diagnostic framing, which concerns how problems are defined and who is to blame for them; (2) prognostic framing, which involves the articulation of solutions and appropriate strategies for attaining them; and (3) motivational framing, which serves as a “call to arms” for social movement members.”

It does not require a particularly perceptive reading of the above to notice the embeddedness of an assumption of contention. Identification of a problem leads to blame, which in turn leads to a “call to arms”. The notion that problematization and blame is the genesis of action is seductively verisimilar and
quite possibly true in many, and even most, instances of mobilization. However as fields such as psychology (Seligman & Csikszentmihalyi, 2000) and organizational theory (Cameron & Quinn, 2003; Cooperrider & Srivastva, 1987) have found, it is very unlikely to be true in all cases. Motivation and collective action can issue from aspirations, goals, and ideals in addition to grievances. ‘Aspirations’ and ‘grievances’ are not just two words for the same thing. There are real and substantive cognitive, emotional, and relational differences between motivation based on problematization and blame versus a focus on aspirations and opportunities (e.g., Frijda, Kuipers, Ter Schure, 1989; Heapy & Dutton, 2008). By conflating these two very different sources of motivation, theorists occlude what may be an important variable in determining movement outcomes.

Indeed, framing emphasizing problematization has different consequences than alternate forms of framing. A focus on grievances can lead to emotions of anger and blame, and activists’ emotional reactions to similar issues can lead to different modes of interaction with institutional structures, which may influence their ability to secure the resources and political support necessary to achieve change objectives (de Celles et al., unpublished). The ability to mobilize collective action amongst sympathetic groups may also be influenced by whether realities are framed as problems or opportunities, and whether goals are framed as the amelioration of grievances or the realization of aspirations. And the tactics actors use to realize these objectives are also likely influenced by the extent to which mobilizing frames are grievance or aspiration oriented (de Celles et al., unpublished). Given the consequential nature of how activists frame current
reality and movement objectives, theories of mobilizing frames must treat grievances as a variable, not an assumption.

**Framing contests**

If mobilization occurs on the basis of shared grievances and results in a call to arms, the discursive dimension of social life becomes a battlefront. Grievances and contentious frames result in ‘framing contests’ (Kaplan, 2008), as the meanings, symbols, and language associated with disputed social conditions become a nexus of struggle. The framing of pro-abortion as ‘pro-choice’ and anti-abortion as ‘pro-life’ is a common example of the contested nature of mobilizing frames. The recent framing of same sex marriage as a civil right is another example in which the battle over how an issue is framed is important in determining the trajectory of an issue movement. What is less apparent in these examples – and less studied by social movement scholars – is the collaborative dimension of framing processes. The positioning of same sex marriage as a civil rights issue was partially a contest with those whose views they opposed, but also important was the effort to create framing collaborations with potentially sympathetic groups. Same sex marriage activists created framing – and tactical collaborations with civil rights campaigners, family values advocates, and even those for whom the preserving the institution of marriage was the core concern. It could even be compellingly argued that the recent success in creating greater public acceptance of same sex marriage should be attributed more to framing collaborations than framing contests.
Resource contests

It is said in military circles, “amateurs discuss tactics, while professionals discuss logistics” (Economist, 2013, April 27). In social movement theory, the ability to mobilize the necessary resources is critical, and the military metaphor is prevalent. Movements must obtain resources to support mobilization and deny and disrupt the resource access of their opponents (Zald, 1992; Cress & Snow, 1996; Luders, 2006; Garrett, 1987). Tactics such as boycotts, logistical disruptions, and strikes are used to directly disrupt governments’ or corporations’ ability to access resources. Indirectly, protests and other forms of campaigning in the public sphere can create reputational effects, leading to stock market declines, a perception of increased risk, or altered consumer behavior (King, 2008; Luders, 2006; Garrett, 1987; Friedman, 1999). With few exceptions (Hiatt, Sine, & Tolbert, 2009; Sine & Lee, 2008; Den Hond & De Bakker, 2007), resource-mobilization theory has typically focused on how movements collaborate to acquire resources, which are then used to contend with their opponents. Little attention has been paid to how movements may actually collaborate not to obtain resources, but to provide them. Scholars have begun to theorize how activists can play a role in institutionalization as well as deinstitutionalization through tactics such as ‘buycotts’ (Den Hond & De Bakker, 2007), but the tactical range and empirical base of this exploration has been very limited. Movements’ ability to mobilize mass action, command legitimacy vis-à-vis certain issues, and generate public awareness could be potential assets to organizations typically considered
targets (Sine & Lee, 2009). By collaborating with such organizations, movements may provide resources that incentivize behaviors consistent with movement objectives. The metaphor of a battle between movement organizations and their targets again limits an important area of inquiry.

**Political contests**

Political opportunity theory recognizes the importance of allies and the openness of political structures in determining tactical choices and the success of various movement tactics (Kriesi, 2007; Goodwin & Jasper, 1999; Tilly, 1995; Amenta, Carruthers, & Zylan, 1992). Open political structures create opportunities for movements to achieve their objectives through collaboration with allies. However, the assumption that social movements stem from grievances amongst disenfranchised parties has also skewed political opportunity theory such that it focuses on contentious mechanisms of political change to the exclusion of collaborative mechanisms. Movements’ ability to secure elite allies, create issue awareness through free media, use public spaces to mobilize are perceived merely as tools movements use for what ultimately remains a contentious strategy (e.g., Jenkins & Eckert, 1986). The following summary by Kriesi (2007) of Koopmans (1993) captures the limited conception of the strategies available to movements:

> “Confrontational protests, like occupations, sit-ins, and blockades are attracting media attention, although the movement does not yet have a large mobilizing capacity. This initial strategic model is, however,
inherently unstable. Tactical innovations lose their ability to surprise and to attract media attention, and authorities learn to deal with such actions more effectively. Social movements must compensate the loss of novelty by increased numbers or increased militancy – the two basic alternative strategic options. The choice of a strategy to increase numbers is favored if strong allies are available.” (Kriesi, 2007, p81)

The two basic alternative strategic options are increased numbers of people participating in confrontational tactics, or increased militancy of such tactics. Allies are perceived within the framework of the grievance based, military confrontation metaphor – as supporting increased numbers or militancy of tactics in order to attack and weaken the target. In zero-sum situations in which the interests of the movement and the interests of those with the power to satisfy the movement’s objectives are fundamentally irreconcilable, this bounded conception of strategic options may be appropriate. However, such zero-sum situations do not necessarily represent all contexts within which movements pursue their objectives. A number of specific situations could provide a very different set of strategic options for movements:

- A target that is not yet aware or is neutral with respect to the movement’s issue.
- A target that does not recognize that satisfying the movement’s objectives may serve their own interests.
• A target that supports a movement’s objectives but has not been able to rally the necessary support amongst their own constituents (e.g., voters, funders, customers).

• A target that supports a movement’s objectives but has not been able to acquire the resources necessary to pursue these objectives effectively.

In the above examples, mobilization may be useful but pursuing confrontational tactics of increasing size and militancy would likely be ineffective. In such cases, the contentious metaphor of political opportunity theory and the tactical implications of this theoretical bias are, at best, limited.

REPertoires OF CONTENTION

These framing, resource, and political contests are fought using a diversity of tactics. These tactics are described as movements’ ‘repertoire of contention’ (Taylor & Dyke, 2003; Tilly, 1993; Traugott, 1995). The repertoire describes the historically and contextually situated stock of tactics from which movements draw the specific tactics they use to achieve their particular aims. Just as a musician may not play their entire repertoire in a given performance, “The repertoire is… not only what people do when they make a claim; it is what they know how to do.” (Tarrow, 1993) This stock of tactics is influenced by macrohistorical, technological, movement specific, contextual factors, and diffusion processes, making it highly contingent.

The contingency of conflict
Repertoires have thus been shaped by a number of factors. Broadly, scholars have distinguished between traditional and modern repertoires (Soule, 2007), pre-political and political (Hobshbawm, 1978), and old and new social movements (Koopmans, 2004). Macrohistorical institutional factors such as the rise of nation-states, and the subsequent emergence of supra-national structures have transformed the nature of tactical repertoires from being primarily local to national (Tilly, 1993), and eventually multinational (Tarrow, 1994).

Technological developments have expanded the repertoire from the barricades of the French Revolution to the ‘hacktivist’ tactics and social media fueled mobilization of modern movements. And repertoires change within the life cycle of a movement, with highly contentious early stages giving way to more institutionalized latter stages (Hopper, 1950). Scholars also discuss immediate contextual factors that affect agents’ selection of tactics from within the repertoire: relative advantage, compatibility, complexity, triability, observability of results (Snow, Soule, & Kriesi, 2010). The central message of decades of research into repertoires of contention is that they are highly variable and this variability is contingent upon an array of factors.

Tilly (1993) argued that tactical repertoires became less deadly between the 18th and 19th centuries. However the early years of the 21st century has provided much cause to doubt such optimistic claims. Anti-colonial liberation movements that were dominant in the latter half of the 20th century in North Africa, the Middle East, and Central Asia have evolved along multiple, diverging paths. While some factions served as the ideological, organizational, and tactical
forbears of peaceful pro-democracy movements such as those seen in the Arab Spring, others adopted violent terrorist tactics. The past year alone has seen violent confrontations between movements and their targets in Syria, the United States, Italy, Greece, Tunisia, Egypt, China, Japan, South Africa, Russia, and countless other countries. And in a horrifyingly clear example of the co-evolution of tactical repertoires, the initially non-violent mobilizations in Syria and Egypt have morphed into a cycle of catastrophic violence.

In such a context it would be very hard to argue that there is a sustained trajectory towards less contentious tactics. But while such cases provide a very clear warning against Panglossian historicist predictions, they reinforce the understanding that tactical repertoires are extremely contingent. The success of highly contentious tactics is also contingent, with mixed and qualified conclusions about the relative effectiveness and long-term impact of contentious and violent tactics (Tilly et al., 1975; Piven & Cloward, 1979; Soule et al., 1999; Cress & Snow, 2000). Alongside the early 2010’s “moment of madness” (Tarrow, 1993), there is a frequent if not equally visible or salient use of collaborative tactics by movements (Den Hond & De Bakker, 2007). Such tactics are not just non-violent, but are non-contentious in that they do not achieve their aims through mechanisms such as reputational harm, operational disruption, or the creation of corporate or political risk. Instead they may play a complementary role to contentious tactics (Den Hond & De Bakker, 2007).

That the tactics comprising the repertoire of contention are contingent is clear and acknowledged. However the collaborative approaches used by a number of
highly influential movements suggests that the use of contention as a strategy by movements may be itself contingent. There is extensive research that recognizes the use and importance of less contentious and more collaborative approaches by movements. However despite extensive research cataloging contentious tactics and theorizing the mechanisms by which such tactics achieve movement objectives, there is as yet a paucity of research that does the same for collaborative tactics. The research that does exist is largely theoretical (e.g., Den Hond & De Bakker, 2007), or does not adequately address the implications of collaborative tactics on existing social movement theory (Soule & King, 2008). This raises important questions. First, what collaborative tactics do movements actually use? Second, can these collaborative tactics achieve movement outcomes, and if so, how? And finally, what implications does this use of collaboration by movements have on framing, resource mobilization, and political opportunity theory? The starting point for challenging the assumption of contention that permeates social movement theories is developing a grounded and detailed understanding of the repertoire of collaboration.

**RESEARCH OBJECTIVES**

This study thus develops a theory describing the ‘repertoires of collaboration’ used by movements. I have two specific objectives. First, as was essential in developing prior theory of tactical repertoires (Tilly, 1993), I catalog and categorize a wide variety of collaborative tactics used by movements. Second, I develop propositions describing the causes of collaboration. Third, I use the data
derived from these tactics to theorize the mechanisms by which collaboration can lead to the realization of movement objectives. Finally, by creating an empirical grounding for understanding the use of collaboration by movements, I explore the implications of collaborative approaches on various areas of social movement theory.

METHODS

To answer these questions, I conducted an inductive study of instances of collaboration between movements and their targets. I collected and analyzed archival data on movements to identify and classify the variety of collaborative tactics used by movements. I complemented this with an abductive process of developing grounded theory (Glaser & Strauss, 1967) of the causes and consequences of collaboration, and iterated between data analysis and relevant areas of social movement theory to evaluate the implications of the data on theory. I focused not on a specific geographical area but instead on an issue movement that has adopted a number of collaborative tactics in addition to a long and rich history of contention - the modern environmental movement.

Data

I collected data of collaborations between social movement organizations and governments or corporations in the modern environmental movement. This context was selected not because it is representative of the broader landscape of movements, but because of its relevance to this study’s objectives. This theoretical sampling approach provides a combination of relevant data and
requisite variability to answer the study’s theoretical questions (Glaser & Strauss, 1967). First, environmental movement organizations are known to use collaborative tactics (e.g., Sharma & Kearins, 2010), providing sufficient data on the specific collaborative tactics used. Second, environmental movement organizations also use contentious (e.g., Sine & Lee, 2009) approaches. Actors are thus familiar with both approaches and may be better able to distinguish the unique mechanisms by which collaboration can achieve their objectives, in comparison to contentious approaches. There is also significant variability within the environmental movement on important factors that are seen as relevant to movement phenomena that are often conflated with collaboration. The environmental movement demonstrates variance in degrees of institutionalization, public acceptance, professionalization, and institutional contexts (Rootes, 2004). The use of collaborative tactics by environmental movement organizations with varying degrees of each of these factors would affirm the orthogonality of collaboration vis-à-vis concepts such as institutionalization and co-optation. Environmental movement organizations also target a variety of actors such as corporations, municipalities, state governments, local populations, consumer groups, and others. This variability in target types will broaden the range of collaborative tactics examined as well as the mechanisms of change these collaborative tactics employ.

Within the modern environmental movement, I focus on the tactics used by social movement organizations. SMOs are one of the most frequent units of analysis in social movement research and provide a lens through which to observe
a significant portion of the tactics used by movements (Davis, McAdam, Scott, & Zald, 2005; Davis, Morrill, Rao, & Soule, 2008). Past studies on tactical repertoires have often used the protest event analysis approach and archival research of public news sources to explore the tactics used by movements and their causes and consequences (Koopmans & Rucht, 2002; Tilly et al., 1975; Shorter & Tilly, 1974; Jenkins & Perrow, 1977; Soule et al., 1999; Van Dyke, 2003). Protest event analysis typically focuses on particular instances of mobilization (e.g., a protest, a sit-in, a strike), and evaluates the qualitative and quantitative data that precedes or follows the event, typically using reports in newspapers (Koopmans & Rucht, 2002). However, given the salience of conflict both for reporters and consumers of news, the issues of biased reporting and disproportionate coverage that have been problematic in previous studies (Koopmans & Rucht, 2002; McCarthy, McPhail, & Smith, 1996; Mueller, 1997; Oliver & Myers, 1999) are exacerbated in this study comparing collaborative and contentious tactics. In short, while a small pipeline protest may make the front page, a joint research venture between Greenpeace and Exxon will likely not be reported in public news sources. In such cases often the only available source of information on collaborations between movements and their targets is communication from the parties themselves. As such, I gathered information on the tactics used by environmental movement organizations primarily from these organizations’ annual reports, self-published articles, web sites, and in a minority of cases through third parties. While using what is essentially self-reported data significantly limits the objectivity of the data gathered, the explanations used to
describe and justify collaborative activity also provides insight into the actors’ own perceptions of and justifications for their actions. As the objective of this study is to generate theory on the collaborative tactics used and the mechanisms of change such tactics employ, collecting data from sources that describe tactics and the rationales underlying them from the perspective of the actors that use such tactics is appropriate. The analyses that follow do not purport to be a critical review of the effectiveness of collaboration, but instead attempt to develop grounded theory on the collaborative tactics used and the theories of change that lead to and justify such tactics.

Analysis

I used an abductive grounded theory (Glaser & Strauss, 1967) approach to protest event analysis (Koopmans & Rucht, 2002) to analyze the data in this study. Protest event analysis is typically used to quantify qualitative data through a rigorous process of identifying variables, coding for these variables from public sources, and using the resulting data to quantitatively test theory on causes and consequences of protests (Koopmans & Rucht, 2002). As the objectives of this study were about generating, not testing theory, I did not specify most codes and code categories before the study (the exception being the code ‘collaboration’, which I did define prior to data collection). I also did not attempt to quantitatively test links between the antecedents and consequences of collaboration. Instead, I adopted the inductive methods of grounded theory (theoretical sampling; iteration between reviewing literature, theorizing, and data; emerging codes and categories
through constant comparison to theory and data), and applied these to the general process used in protest event analysis. This inductive form of protest event analysis used in this study was, broadly:

1. Identified the unit of analysis (instances of collaboration)
2. Searched public records for instances of collaboration (in this case, typically self reports instead of newspaper reports – I searched using lists of environmental movement organizations)
3. Finding other reports on the same instance of collaboration
4. Coding these reports (in the case of this study, inductively instead of based on previously defined codes)
5. Relating this codes to variables of interest (in this case, relating inductively emerging codes to other inductively emerging codes, instead of to previously defined codes or measures)

I iterated between data-collection and analysis, typically gathering about 10 documents, coding these documents, and then returning to data-collection. I used a software – Dedoose – that allowed me to code particular pieces of text within source documents, as well as code at the document level, so that I could explore any links between individual codes and their sources. It also allowed me to examine frequency with which multiple codes were found on overlapping pieces of text or the same document (e.g., ‘aspirations’ and ‘collaboration’). Examples of the process of coding, code aggregation, and analysis can be found in Figure 1.
Through the coding and analysis process, I began by collecting data that fell into a number of general categories that were linked to my research questions, to ensure that emerging codes addressed the various dimensions necessary to generate theory relevant to the research question. These categories were: contentious tactics used; collaborative tactics used; parties to the contention/collaboration; the issue or outcome; and explanations or rationales used for the tactics. In addition to the general categories, I used the constant comparison method to sort codes into sub-categories, which are presented throughout the results section below. For example, approximately 80 primary codes describing collaborative tactics sorted into 50 final collaborative tactics. I continued gathering data until new codes and categories did not emerge from each subsequent source analyzed. In total I examined approximately 70 source documents. I then used these sub-categories to re-code all of the documents. This provided an overview of the data that allowed me to observe and build theory around general relationships between the categories.

As is important in grounded theory development, I continued reviewing existing theory and developing propositions for theoretical relationships as I conducted the inductive analysis. For example, my understanding of the mechanisms of change employed by collaborative tactics evolved throughout the
course of the study, as I reviewed literature, analyzed data, and eventually settled upon a classification of collaborative tactics that represented the implicit theories of change in use by social movement actors.

**Distinguishing Collaboration from Related Phenomena**

In identifying instances of collaboration for analyses, it was important to distinguish between collaboration and three related yet distinct phenomena; co-optation, institutionalization, and negotiation. First, co-optation of social movements has been described by scholars (Couto, 1988; Coy & Hedeen, 2005; Selznick, 1949) and derided by movement activists (Smith, 2004). Co-optation refers to the process by which a movement compromises its goals and independence. Institutionalization is a process by which a movement creates formal institutions to achieve its objectives (Koopmans, 1993; Kriesi, Koopmans, Duyvendak, & Giugni, 1995). Institutionalization is more permanent than the potentially temporary use of collaborative tactics, and does not necessarily require collaboration between a movement and a target. Greenpeace, for example, institutionalized in its early history in order to obtain funding and manage its activist network, but continued to use contentious tactics vis-à-vis its targets. Negotiation is an interaction between a movement and its target in which a concession is sought from the target in exchange for a cessation or relaxation of contention by the movement (Della Porta, Peterson, & Reiter, 2006). While an outcome of negotiation may be collaboration, negotiation itself does not imply collaboration, and indeed is often the result of sustained contention between a
movement and a target. Collaboration, in contrast, refers to an interaction between a movement and a target that is premised on working together to achieve aligned or mutually agreeable objectives. I use Gray’s (1985) simple definition of collaboration when coding tactics as collaborative:

“By collaboration we mean: (1) the pooling of appreciations and/or tangible resources, e.g., information, money, labor, etc., (2) by two or more stakeholders, (3) to solve a set of problems which neither can solve individually.”

While collaboration may result from or cause institutionalization or co-optation, it is a distinct tactic that is engaged in between an independent movement and another party, in which the capabilities or resources of both of these entities are used to achieve an outcome. Each of the collaborative tactics collected below meets the criteria suggested by this definition of collaboration, while many of these would not meet the criteria implied by the concepts co-optation, institutionalization, or negotiation.

RESULTS

Figure 2 summarizes the preconditions and consequences of collaboration, in reference to existing areas of social movement theory. It provides a model through which to analyze the various influences that the collaborative parties and the collaborative practices in which they engage can have on one another and on social structures. Below I describe the repertoire of collaboration, the conditions for collaboration, and the recursive effects of collaborative tactics.
The Repertoire of Collaboration

In addition to social movement organizations, the parties to collaboration included corporations, governments, universities, schools, school systems, unions, and individuals in their roles as citizens or consumers. I identified 50 distinct collaborative tactics used by environmental movement organizations. Table 2 specifies these tactics, and provides an example of each. Collaborative tactics are also categorized according to the broad mechanism of social change they employ. In categorizing the tactics used, I found Giddens (1984) distinction between ‘facility’, ‘norm’, and ‘interpretative schemes’ provided a comprehensive and convenient framework within which these mechanisms of change could be classified. Their position within Giddens’ framework helps categorize the means by which these SMOs used collaboration to shift social structures. All categories below these three higher order categories emerged inductively from the data. Below I will explicate the distinct role that collaborative tactics played in enabling these SMOs to achieve their objectives.

In one instance of collaboration, the Sierra Club worked with the Obama administration to publicly advocate a revised policy for Arctic oil exploration and
drilling. Their public networks and environmental legitimacy supported the administration’s efforts, resulted in new policy, and thus changed the structures that authorized certain forms of behavior and prohibited others. Some environmental organizations collaborated not just to develop laws or policies, but also to enforce them. Greenpeace, for example, worked with the Brazilian government to enforce the Convention on the International Trade in Endangered Species. In such cases the environmental movement organizations’ collaborations were not attempts to pressure or otherwise coerce policymakers into adopting different objectives, but were instead support for objectives that their targets were already pursuing.

The Alliance to Save Energy provided another form of resources, by mobilizing human resources to design and implement energy efficiency programs with companies that would otherwise likely not dedicate resources to energy conservation. And the WWF’s ability to legitimize and promote certain products as environmentally responsible created a material incentive for corporations to design and market these products. Again, these collaborative tactics were not attempts by movements to disrupt the resource access of their opponents through strikes, boycotts, or other such contentious tactics. Instead, they were used to actually provide resources to those targets who exhibited behaviors consistent with the environmental movement’s objectives.

P1a – Collaborative tactics achieved movement outcomes through providing, not threatening, their targets’ resource access.
Movements also used a number of tactics that were designed to shape the
norms in an industry, with respect to a particular product, or in society more
broadly. These collaborative tactics that influenced norms were categorized into
voluntary standards, certifications, and branding. Voluntary standards generally
influenced legitimacy amongst ‘peers’ such as through industry groups. The
Global Reporting Initiative, for example, was started by movement organizations
to create transparency in environmental reporting amongst firms. Far from
obligatory and without force of law, the adoption of this practice by some firms
nonetheless changed the norms for firms reporting of environmental performance.
Certifications created a legitimacy function in the relationship with consumers or
the broader public by providing formal recognition - and often independent
verification - of an actor’s adherence to standards. Certifications such as Sierra
Club’s ‘GreenCheck’ program or LEED building certifications were used to
create a distinct cue by which consumers could evaluate company products and
services against environmental norms. Branding also legitimized certain
products, but generally in a less formal manner through communicating a
collaborator’s organization or product as being environmentally positive. In each
of these cases, movement organizations did not engage in contentious tactics in
order to withdraw normative sanction from targets, but instead engaged in
collaborative tactics in order to provide normative sanction to those who were in
keeping with their environmental objectives.

P1b – Collaborative tactics achieved movement outcomes through providing,
not threatening, normative sanction to their targets.
A number of collaborative tactics used by environmental movement organizations worked to innovate, educate, or in other ways shift the ways in which their targets interpreted subjects of relevance to their environmental objectives. In the ‘theorization’ category, a WWF initiative sought to create new business models that would integrate commercial and environmental objectives through their “Green Game Changers” report. By doing so they created new categories to describe and thus shape practices (c.f., Feldman & Orlikowski, 2011; Greenwood, Suddaby, & Hinings, 2002). The Environmental Defense Fund worked with the private equity firm KKR to incorporate environmental criteria into their analyses of coal energy investment opportunities, adjusting the priorities of this target without changing KKR’s fundamental profit motivation. The Alliance to Save Energy worked with schools to incorporate energy conservation content into school curricula. And ForestEthics as well as other environmental organizations worked with cities to provide the content expertise necessary to complete the initiative to divest from tar sand investments.

As is evident from the examples included in Table 2, each of these approaches did not attempt to fundamentally shift existing values of the movement’s collaborators, but instead provided concepts or information that blended or integrated the values of targets with those of the movement. This is clearly distinct from the use of contentious tactics to attack, undermine, or change the values of a movement’s opponents.
P1c – Collaborative tactics achieved movement outcomes through blending, not contesting, the interpretative frames of their targets.

**Conditions for Collaboration**

The above describes an extensive list of the collaborative tactics used by movements and the mechanisms by which such tactics attempted to realize movement objectives. However also of interest to theorists are the conditions by which movements adopt certain tactics. Two broad areas have been identified as determining mobilization: political opportunity structures and mobilizing grievances. In the cases examined here of the use of collaborative tactics, these two broad areas were explored but two distinct preconditions were identified in the use of collaborative tactics by social movement organizations and their targets. The first was a shared aspirational framing space that served as the basis of the collaborative practice. The second was a shared space within which the actual collaborative practice could occur.

**Aligned aspirational frames**

Particularly evident in analyzing descriptions of collaborations, as well as the organizations and divisions within organizations that emphasized collaboration versus contention, was a focus not on grievances but on aspirations. The Nature Conservancy, a frequent collaborator, sought to “protect nature, for people today and future generations.” (Nature Conservancy, 2013) In contrast, Friends of the Earth, an organization that often takes a more contentious approach to realizing its
objectives, frames its purpose as, “eliminate [the economic drivers of environmental degradation] and thus bring environmental degradation to a halt.” (Friends of the Earth, 2013) Environmental Defense Fund, another frequent collaborator describes its mission as, “to preserve the natural systems on which all life depends.” (Environmental Defense Fund, 2013) Greenpeace, an organization that has begun to include more collaborative approaches in recent years, has also begun to shift how it frames its role from redressing grievances to realizing aspirations. In analyzing instances of collaboration, the collaborating parties typically emphasized shared aspirations as opposed to grievances requiring corrective action.

This shared aspirational framing described alignment in both interests and tactics that served as the foundation for collaboration between the parties. In some cases this reflected a shared concern for environmental issues, while in others it represented a perception that the SMO’s environmental interests were compatible with, for example, a corporation’s financial interests. WWF’s use of green branding emphasized consistency between their own environmental objectives and, for example, CocaCola’s profit objectives and organizational values.

P2: Collaboration between social movement organizations and their targets is more likely when these frames focus on aspirations instead of grievances.

*Open political opportunity structure*
Accounts of collaboration almost universally described a particular context within which the collaboration between the SMO and collaborating parties took place. Table 3 describes these various contexts. These shared spaces were organizational (e.g., SMO facilitation of a multi-stakeholder partnership to address a fishery); physical (e.g., collaboration between an SMO and a corporation to host an Earth Day event); institutional (e.g., SMO provision of experts to assist legislators in passing new air pollution standards); and technological (e.g., interaction between SMO members and corporate members to develop new products on a web platform). Many collaborative configurations involve more than one of the above, as when a joint venture emerges from mutual involvement at a physical event. Each of these provisions for interaction is representative of a context of structural openness that provides for the interaction between parties. While all instances of collaboration examined took place within a space of structural openness, there was no evidence of a drop-off in collaborative interactions as structural contexts became more open. This evidence is distinctly different from existing political opportunity theory that suggests a curvilinear relationship between the openness of a political opportunity structure and movement activity (Eisinger, 1973; Kriesi, 2008).

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Insert Table 3 about here

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P3: Collaboration between SMOs and targets increases in a linear manner with the openness of the political opportunity structure.

The recursive effect of collaboration

The instances of collaboration studied also made it evident that there is a recursive influence of the collaboration not only on realizing both parties’ objectives, but on the likelihood of future collaboration. Early successes, for example, led McDonalds to embark upon a decade-long process of waste-reduction and its partner, the Environmental Defense Fund, to adopt more collaborative tactics and make internal organizational changes to support this collaborative strategy (Environmental Defense Fund, 2013). CocaCola’s collaboration with the World Wildlife Fund on fresh water and climate change has become integrated into the advertising and promotional strategy of one of the world’s most valuable brands (Miller, 2013). Both of these are instances in which the alignment of aspirational frames increased as a direct result of collaboration. McDonalds and CocaCola realized the profit opportunity from collaboration, and understood that this opportunity was consistent with the environmental objectives of their partners. The involvement of Goldman Sachs’ senior management in environmental movement organizations such as the Nature Conservancy and the Wildlife Conservation Society resulted in conservation collaborations of 735,000 acres of wilderness (Goldman Sachs, 2013). These early involvements in voluntary and governance capacities created a shared interaction space that served as the basis of these substantive subsequent collaborations. The process of
collaboration can demonstrate successes that show the alignment of parties’ aspirations, provide the interaction space that can give rise to collaboration, and engender a proclivity to collaborative agency. While contentious approaches may achieve objectives but often do so at the expense of an ongoing positive interaction between parties, collaborative approaches can lead to reinforcing cycles of interdependence.

P4: Collaborative tactics tend to increase the conditions leading to collaboration, and create increasing, not decreasing, institutional interdependence between the movement and its target.

DISCUSSION

Collaboration is a crucial element of environmental movement organizations’ tactical repertoire. The variety of collaborative tactics has allowed environmental movement organizations to achieve diverse objectives with diverse targets. The theory generated above also has important implications for a number of areas of social movement theory.

Mobilizing aspirations

The above study suggests that aspirations can mobilize in addition to grievances, and that mobilization on the basis of aspirations may lead movement actors to select more collaborative as opposed to contentious tactics. Further research should test this proposition. Distinguishing aspirations from grievances also raises a number of important questions. Future studies should examine the
effects of aspirational vs. grievance framing on factors such as movement participation, public acceptance of an issue, and the ability of a movement to secure resources of various kinds. Further, theory of mobilizing grievances has proposed a number of possible forms that such grievances can take. Aspirations can also take a variety of forms. Individual aspirations such as bettering one’s economic circumstances or improving one’s family’s quality of life can be distinguished from generalized aspirations for one’s country or with respect to a particular issue. Further distinct from these psychological aspirations are structural aspirations, such as the incentives a corporation has to increase profitability or the incentives a government has to satisfy voters. While the above study suggests that aspirations are more conducive to collaboration than grievances, variability in forms of aspiration may affect the interaction of individuals, organizations, and movements.

Capabilities view on resource mobilization

This study has identified a number of tactics by which movements actually provide resources to their targets, instead of mobilize resources in order to support contentious tactics. By endorsing or promoting certain products, lending expertise, mobilizing human resources, and using networks to rally support for certain organizations or initiatives, movements use their unique capabilities to incentivize behaviors consistent with their objectives. Existing resource mobilization theory views movements as attaining resources, using these resources to mobilize in contention with a target, and using contentious tactics to
disrupt the resources of their target so as to create pressure on the target to concede to the movement’s claims. A resource mobilization theory that would incorporate the collaborative tactics described in this study would recognize the capabilities of the variety of actors in a social field. A movement may be able to mobilize mass action; create and deploy legitimacy in their chosen issue; and act with tactical freedom given their extra-institutional position. A corporation may be able to secure extensive financial resources; affect supply chains and distribution channels; and command legitimacy amongst the business community. And a government may be able to pass laws and regulations; enforce these regulations; and convene or communicate to a broad audience. All of these are capabilities that issue directly from the unique social position of a given actor. These capabilities can be used to contend with one another where grievances and misaligned interests exist. But they can also be used to collaborate to pursue shared aspirations. A more comprehensive resource mobilization theory would not purport a one-way transfer of resources from elites or the public to a movement which is then used to support contention, but would recognize the multifaceted nature of capabilities and the potentially multidirectional flow of resources.

**Political opportunity**

As in resource mobilization theory, this study suggests and expansion of political opportunity theory to include collaborative political processes that do not rely on or simply support subsequent contention. Through collaboration,
movements can educate their targets; highlight compatibility of interests where previously interests were seen as mutually exclusive; and create more conducive political contexts through the integration of those with aligned interests. While existing political opportunity theory demonstrates how movements exploit cleavage structures, institutions, culture, and other contextual features to weaken and defeat opponents, new theory should explore how collaborative tactics can issue from and take advantage of political opportunity structures. An understanding of how movements, for example, recognize, develop, and capitalize on latent compatibilities in institutional fields should complement the abundance of theorizing on how movements exploit cleavages in such structures. Currently most theory dealing with compatibilities between a movement and other actors focuses on alliance-formation in order to contest a target. An understanding of how movements can achieve their objective purely through recognizing compatibilities for the purposes of engaging in collaborative approaches to social change would complete the other half of this picture.

Second, the degree of openness of political opportunity structures has an apparent curvilinear relationship with movement activity (Eisinger, 1973; Kriesi, 2008). One of the most stable findings in social movement theory (Kriesi, 2008), this theory has focused exclusively on the prevalence of contentious movement tactics. The explanation for the drop-off of movement activity as political opportunity structures become more open is described as follows:

“In an extremely open system, reform is forthcoming anyway – that is, the social movement actors do not need to mobilize; while in an extremely
closed system, reform is never forthcoming and repression is so great that movement actors do not have any opportunity to mobilize or to form in the first place.” (Kriesi, 2007, p82)

Such a view attributes inevitability to reform in open societies. While this may be true in the limited number of cases where the objective of the movement is political reform itself, it is clearly not inevitable for a vast majority of issue movements that must advocate for their causes even in – and perhaps especially in – an open political structure. This is a clear example of how a focus on contentious tactics obscures important movement phenomena and thus compromises theoretical accuracy. Empirical work should explore whether this curvilinear relationship applies to collaborative tactics, or whether collaborative tactics actually steadily increase as political structures become more open. Indeed, perhaps the curvilinear relationship between political openness and protest and a potentially linear relationship between political openness and collaboration reflect a more fundamental relationship between political structures and the frequency, distribution, and form of civic engagement.

**Movement strategies and tactics**

This study suggests that the concept that repertoires of contention are contingent must be expanded to recognize the contingency of contention itself. Movements use a broad array of sophisticated collaborative tactics to achieve their objectives, and scholars should continue to explore how these tactics change over time, and respond to variations in context and actor characteristics. In
particular, the coexistence of collaborative and contentious tactics within the same movement and even within the same movement organizations suggests a strategic choice confronting movements. Understanding the factors that influence this choice could be theoretically illuminating and useful policymakers, movement targets, and movements. While the catalog of tactics developed here provides a starting point for understanding the role of collaboration in achieving movement outcomes, the creativity movements have used in developing contentious tactics makes it clear that new tactics will be constantly added and new modes of influencing collaborators developed. Scholarly research on this topic should aspire to a commensurate currency and dynamism.

Theory of change

The basic theory of change underlying contentious social movements is, simply expressed, as follows:

There is a problem, and the target is to blame because they are in power. If we mobilize enough resources and public support and political will, we can pressure this target to change their ways, so this problem will be solved.

The theory of contention is that, through protest, social movements create pressure on those in power to use the institutional channels at their disposal to achieve their objectives. However, as Foucault (1980) and others (Giddens, 1984; Bourdieu 1977) have established, the nature of power in modern democratic society represents a distributed ‘economy of power’ (Foucault, 1980) more than the possession of a sovereign. It is pervasive, and although it is certainly not
distributed equally, is it also not an undifferentiated commodity concentrated in an independent ‘state’ or other such reified monolith. As social movement leaders and their targets increasingly adopt such a view, their implicit or explicit theory of change may shift. They may recognize that there are many forms of power, and that their supposed target may feel just as constrained by their possession of resources and legitimacy as the movement actors feel by their lack of resources and legitimacy. Institutional theory describes these limitations as institutional embeddedness (Battilana & D’Aunno, 2009; Seo & Creed, 2002). Marginalization, in a world where actors in all positions in a social field possess certain unique capabilities and limitations, is a relative, highly situational term. A collaborative theory of change can thus complement the contentious theory of change described above:

*We have an aspiration. We must find others who share this aspiration or can benefit from its realization. We can mobilize our unique capabilities to achieve these shared or aligned objectives.*

By providing resources, legitimacy, and knowledge, movements supported those behaviors they deemed favorable instead of solely disrupting behaviors deemed unfavorable. Collaboration will not replace contention entirely in the vast majority of movements. Differences in interests and opinions do exist, and in even in many collaborative engagements there is a degree of contention. But this focus on contention to the exclusion of collaboration contorts theories of social movements that should take into consideration the variety of tactics actually in use by important movements. An understanding of aspirations should
complement our understanding of grievances, and we should recognize the unique capabilities that movements have and how these may be of value to their targets for purposes other than victory on a battlefield.
<table>
<thead>
<tr>
<th>Definition</th>
<th>Extra-institutional action</th>
<th>Collective Action</th>
<th>Purpose</th>
<th>Continuity</th>
<th>Contention</th>
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<td>Zald &amp; Ash (1966)</td>
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<td>Tilly (1994)</td>
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<td>Tarrow (1994)</td>
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<td>Blumer (1971)</td>
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<td>Rao (2000)</td>
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<td>Snow et al (2004)</td>
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<td>Meyer &amp; Tarrow (1998)</td>
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<tr>
<td>Dimension of Structure</td>
<td>Mechanism of Change</td>
<td>Collaborative Tactic</td>
<td>Example</td>
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<tr>
<td>Facility</td>
<td>Policy</td>
<td>Develop/proposal policy</td>
<td>Sierra Club collaborates with Unions on &quot;Responsible Trade Program&quot;</td>
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<td></td>
<td></td>
<td>Improve robustness of existing standards</td>
<td>American Farmland Trust support for improvements to 2012 Farm Bill</td>
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<td></td>
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<td>Policy innovation</td>
<td>Zero Energy Commercial Buildings Consortium</td>
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<td></td>
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<td>Policy advocacy</td>
<td>Sierra Club work with Obama admin on Arctic drilling policy</td>
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<td></td>
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<td>Public engagement</td>
<td>Building Energy Efficient Codes Building Energy Efficient Codes</td>
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<td>Network engaging public opinion in lawmaking</td>
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<td>Law</td>
<td>New laws</td>
<td></td>
<td>Technical advisory on Endocrine-Disrupting Chemicals Exposure Elimination Act of 2011</td>
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<tr>
<td></td>
<td></td>
<td>Enforce existing laws</td>
<td>Greenpeace assisted Brazilian government in tracking and enforcing Convention on International Trade in Endangered Species</td>
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<td></td>
<td></td>
<td>Amend existing laws</td>
<td>Greenpeace testimony/petitioning to amend catch limits set by Atlantic States Marine Fisheries Commission</td>
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<td></td>
<td></td>
<td>Overturn existing laws</td>
<td>Coalition of environmental NGOs and state governments collaborate to overturn reinterpretation of federal Clean Air Act</td>
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<td></td>
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<td>Public comments</td>
<td>Friends of the Earth commissioning technical analysis of nuclear reactor, and submitting public comments to Nuclear Regulatory Commission</td>
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<td></td>
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<td>Exploit existing laws/loopholes</td>
<td>41pounds.org supporting opt-out of direct mail</td>
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<td></td>
<td>Mobilization</td>
<td>Direct action projects</td>
<td>Alliance to Save Energy designs and implements energy efficiency</td>
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<tr>
<td>Resource provision</td>
<td>Funding per sale</td>
<td>1$ from each Forever 21-designed animal tee (w/ WWF endorsement) given to WWF</td>
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<tr>
<td>Employees volunteer for cause</td>
<td>Doubletree employees teach WWF-designed conservation program to 10,000 children in 140 cities</td>
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<tr>
<td>Administer public funds and programs</td>
<td>Allegheny Land Trust administers government funds dedicated to trail construction and conservation</td>
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<tr>
<td>Purchasing land</td>
<td>American Bird Conservancy works with partners to purchase and conserve bird habitat</td>
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<tr>
<td>Shifting lending by financial institutions</td>
<td>Sierra Club work with financial institutions to comply with agreements and shift lending away from fossil fuels</td>
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<tr>
<td>Customer contribution</td>
<td>Gap, Inc. encouraging customers to donate to WWF</td>
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<tr>
<td>Employee contribution</td>
<td>EarthShare works with corporations to manage employee giving to associated environmental organizations</td>
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<td>Direct philanthropy</td>
<td>Goldman Sachs' donation of ~735,000 acres of wilderness to Wildlife Conservation Society</td>
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<td>Pledges/commitments</td>
<td>American Farmland Trust working with local food industry to develop and promote 'local food pledge'</td>
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<tr>
<th>Norm</th>
<th>Voluntary standards</th>
<th>Reporting &amp; disclosure</th>
<th>CERES and Tellus Institute convene multiple stakeholders to develop Global Reporting Initiative</th>
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<tbody>
<tr>
<td></td>
<td>Codes of conduct</td>
<td></td>
<td>UN Global Compact, subscribed to by leading corporations, NGOs</td>
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<td></td>
<td>Certification</td>
<td></td>
<td>Sierra Club Green Home &quot;GreenCheck&quot; process for household goods/services</td>
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<td></td>
<td>Product certification</td>
<td></td>
<td>SMO and industry created and supported &quot;Forest Stewardship Council&quot; certification for forestry supply chain</td>
</tr>
</tbody>
</table>
| Company certification | Greenpeace works with cooperating companies to develop and use "Guide to Greener Electronics"
| Branding Awards | WWF works with student-run consultancy to identify candidates for "Green Game Changers" award
| Cause marketing | Adirondack Mountain Club promotes products and provides special offers to members
| Green identity | "Green Bag Tag" card rewards for CVS customers who declined plastic bags, supported by WWF
| Special label/brand/product | WWF-licensed plush animals to be sold at Toys R Us
| Interpretive Scheme | Theorization
| New product categories | Partnerships between 17 NGOs and Green Mountain Coffee Roasters to secure fair trade organic coffee
| New business categories | WWF researching, cataloging, and endorsing new business models in "Green Game Changers" report
| New business models | Local environmental advocacy organizations working with Universities and Companies to develop local food businesses
| Priority framing | Vision-building
| Planning | EDF work with WalMart to develop environmental goals
| EDF and Texas Clean Air Cities Coalition work with PE firm KKR and TXU to revise coal energy expansion plans
| Prioritizing efforts | Alliance for Zero Extinction prioritizing 595 critical sites with endangered bird species
| Championing product adoption | Sierra Club works with electric vehicle manufacturers to promote electric vehicles
| Education | Consumer education
| EDF measuring and distributing information on toxics in products through GreenWERCS program
| Education in school | Alliance to Save Energy working with schools to develop and
<table>
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<tr>
<th>Category</th>
<th>Program/Project</th>
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<tr>
<td>Distribute &quot;Energy Hog&quot; program</td>
<td>American Farmland Trust working with farmers to develop and participate in ecosystem services markets</td>
</tr>
<tr>
<td>Education</td>
<td>American Farmland Trust working with farmers to develop and participate in ecosystem services markets</td>
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<tr>
<td>Public education</td>
<td>African Wild Dog Conservancy's work with governments and community orgs to educate public about wild dog conservation</td>
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<tr>
<td>Youth education</td>
<td>GrowNYC work with Mayors Fund and government agencies to educate youth in local gardening</td>
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<tr>
<td>Target education</td>
<td>EDF's &quot;GreenWERCS&quot; program providing information on toxins to WalMart</td>
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<tr>
<td>Specialist knowledge</td>
<td>Adirondack Mountain Club providing expert testimony on Clean Air Act</td>
</tr>
<tr>
<td>Expert advice</td>
<td>WWF working with Dial to develop/promote environmentally friendly &quot;Pure &amp; Natural&quot; line of personal care products</td>
</tr>
<tr>
<td>Greening product/service</td>
<td>American Bird Conservancy providing research to support gov't-led, multi-stakeholder &quot;North American Waterfowl Management Plan&quot; joint venture</td>
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<tr>
<td>Research/independent study</td>
<td>EDF and FedEx collaboration on developing hybrid delivery trucks</td>
</tr>
<tr>
<td>Technological innovation</td>
<td>ForestEthics, 350.org working with cities (e.g., Burlington, VT; Bellingham, WA; San Francisco, CA) to divest from tar sands</td>
</tr>
<tr>
<td>Managing supply chain</td>
<td>Environmental Defense Fund's &quot;Climate Corps&quot; program providing training &amp; internships to MBA students</td>
</tr>
<tr>
<td>Internship programs</td>
<td>WWF President sits on boards of institutes at Imperial College, Duke, London School of Economics</td>
</tr>
<tr>
<td>Advisory/governance role</td>
<td>WWF President sits on boards of institutes at Imperial College, Duke, London School of Economics</td>
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<td>Collaborative Spaces</td>
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<td><strong>Organizational Spaces</strong></td>
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<td>Joint ventures</td>
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<td>Strategic alliances</td>
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<td>Multiparty collaboration</td>
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<td>New organizations</td>
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<td>Multistakeholder partnership</td>
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<td>Participation in governance</td>
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<td>Boundary organizations</td>
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<td><strong>Physical Spaces</strong></td>
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<td>Large group meetings</td>
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<td>Events</td>
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<td>Joint direct action</td>
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<td><strong>Institutional Spaces</strong></td>
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<td>Expert testimony</td>
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<td>Educational venues</td>
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<td>Public comments</td>
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<td><strong>Technological Spaces</strong></td>
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<tr>
<td>Social network platforms</td>
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<td>Web pages</td>
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</tbody>
</table>
FIGURE 1

Initial coding:

Code aggregation:
Code source analysis:

Code co-occurrence analysis:
FIGURE 2

[Diagram showing the relationship between different elements such as Social movement organization, Target, Collaborative tactic, P1: Mechanism of change, a) Provide resources, b) Provide sanction, c) Succeed knowledge, and P2: Aligned aspirational frames, P3: Open political opportunity structure, P4: Recursive influence reinforcing collaboration.]
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Effects of Collaboration on Breakthrough Solar Technology Innovation

This study tests the relationship between collaboration and breakthrough environmental technology innovation, using a large dataset that merges patent-specific and firm information with data on patents classified as 'green technology' by the US Patent Office. It finds no significant relationship between the measures of inter-firm collaboration or collaboration across national boundaries and the extent to which environmental technologies are breakthrough. It does find a significant relationship between collaboration between inventors and breakthrough solar technology.
Originating in economic theory (Schumpeter, 1942), research has repeatedly emphasized the benefits that accrue to nations, sectors, and firms from technological innovation. A major factor in firm competitiveness, technological innovation is also critical in driving industrial transformations and economic and institutional development. However innovation research has historically focused on the competitive dynamics of innovation to the exclusion of collaboration (Ahuja et al, 2008; Teece, 1992). The provenance of innovation in the economics literature long occluded important mechanisms by which exclusively competitive relationships between firms and within whole industries may actually limit innovation.

Economists’ treatment of firms as discrete and often identical units favored interpretations of inter-firm relationships that emphasized competitive relationships in the market for ideas, resources, and customers. The long-standing focus on competition as the driver of economic growth limited the extent of theoretical and empirical inquiry into alternate forms of inter-firm relationships (Ahuja et al., 2008; Scherer & Ross, 1990; Teece, 1992). Until recent decades the understanding that firms within the same industry may possess different capabilities that could be combined through collaboration was largely ignored in the academic research on innovation (Nelson & Winter, 1982; Teece & Winter, 1984). Collaboration was more often deemed problematic in the context of antitrust law (Harrigan & Newman, 1990).

However in recent decades, collaboration between firms has seen both increased use (Hagedoorn & Schakenraad, 1990; Mowery, 1989; Whittaker &
Collaborative relationships in technological innovation are an important feature of a number of industries, and particularly those industries that are the source of a significant portion of new technologies (Hagedoorn & Schakenraad, 1990; Whittaker & Bower, 1994). Research has generally shown positive effects of collaboration on the amount of research and development investment in technological innovation as well as in many cases the effectiveness of this investment (Ahuja et al., 2008).

**Effects of collaboration**

Research has identified a number of mechanisms by which collaboration is associated with increased innovation. These mechanisms issue from collaboration as a construct characterizing network-level characteristics, as well as representing specific inter-firm relationships. At the level of the network, mechanisms include specialization of efforts; the network as an information transmitter and information processor; better information on what innovations are in demand; and reduced transaction costs because of increased trust (Ahuja et al., 2008). At the level of the firm, mechanisms include complementarity of capabilities; specialization of efforts; and greater access to information (Ahuja et al., 2008). The preponderance of research suggests a positive influence of collaboration on innovation.

However there are also a number of factors that could limit the positive effects of collaboration, and potentially create costs in excess of its benefits
First, the effort and expense required to coordinate collaborators may create costs that offset or exceed the value engendered from collaboration (Contractor & Lorange, 1988). These costs may increase in parallel to the number of collaborators, potentially offsetting the scale economies gained from larger projects (Ahuja et al., 2008). Other costs include the costs of transferring knowledge to collaborators (Teece, 1982) and the duplication of effort that can exist in collaborative arrangements (Grossman & Shapiro, 1986; Harrigan, 1985). Collaborating firms also risk the consequences of self-interested behavior by their partners (Khanna, Gulati, & Nohria, 1998; Oxley & Sampson, 2004). Collaboration is thus not unreservedly positive, and particular industries, contexts, and relationships may be more conducive to capturing its benefits than others.

**Quality of innovation**

Existing research on the effects of collaboration has mostly focused on the quantity of innovations, and has not yet sufficiently examined whether collaboration leads to higher quality innovation (Ahuja et al., 2008; Kotabe and Swan, 1995). Quality of innovation can be measured in a number of ways. Immediate subjective measures may include self-reports from the parties to a collaborative venture, perceptions of industry experts or observers, or the expressed value an innovation provides to customers. Immediate objective measures may include sales, profits, or the economic value attributed to a technological innovation as part of a technology transfer purchase.
The above measures measure quality of innovation from the perspective of particular groups that can capture – in one form or another – the benefits of an innovation. However they do not measure the effects of technological innovation on an industry or economy as a whole. To evaluate the effects of innovation that accrue to the commons and are often not captured by single economic actors, other measures are required. One method of assessing the quality of innovation from the perspective of the broader technological field is the extent to which an innovation serves as the basis of future innovation in the field. Such innovations have been labeled ‘discontinuous’ (Anderson & Tushman, 1990; Tushman & Anderson, 1986) or ‘breakthrough’ (Phene, Fladmoe-Lindquist, & Marsh, 2006). Disruptive or discontinuous innovations have been examined using in-depth and often qualitative studies of technological innovation in a particular field, and refer to those technological innovations that destroy existing competencies, or trigger a shift between ‘dominant designs’ (Anderson & Tushman, 1990; Tushman & Anderson, 1986). Breakthrough innovations have been studied using patent data, and refer to innovations that are highly cited by subsequent innovations in the same field (Phene, Fladmoe-Lindquist, & Marsh, 2006). In both cases, these constructs measure the quality of the innovation, in terms of its influence on a particular field or industry.

An analysis of the mechanisms by which collaboration either facilitates or impairs innovation suggests that collaboration would positively influence innovation quality as measured by the extent to which an innovation is ‘breakthrough’. Most of the mechanisms identified as compromising the positive
effects of collaboration pertain either to the quantity of innovation or the economic value captured by particular firms. Costs of coordination, knowledge transfer, duplication of effort, or self-interested behavior all may reduce the return a firm can expect from collaboration. However they are unlikely to deplete the extent to which a collaboration shapes future technology in the industry. In contrast, specialization of efforts, an integration of complementary capabilities, and improved information flow may all make an innovation more likely to be breakthrough. Further, the process of collaboration and the incentive that multiple collaborators have to ensure the innovation succeeds may enhance diffusion of technology, which would make it more likely that the technology became the basis of further innovation. Given the differential impact of these mechanisms, collaboration is likely to increase the quality of innovation as measured by whether it is considered breakthrough.

H1: Collaboration be associated with to more ‘breakthrough’ innovations.

**Characteristics of collaborators**

From the resource based view, there are numerous and often conflicting studies about the influence of variables such as firm size and research and development expenditures on innovation outcomes, and the influence of incumbency on disruptive innovation (Acs & Audretsch, 1987; Anderson & Tushman, 1990; Tushman & Anderson, 1986). Research has also been conducted on the influence of characteristics of the industry and institutional environment in which an innovator operates. Factors such as country of origin can influence the
innovation investment and outcomes of firms (e.g., Encaoua, Guellec, & Martinez, 2006).

Extensive research demonstrates that collaboration is most beneficial when it integrates the distinct capabilities of multiple collaborators (Ahuja et al., 2007). In this stream of research, capabilities are seen as vested in and possessed by firms. However institutional environments can shape the structure of industries and behavior of firms that may shape the types of capabilities possessed by firms in a given institutional field. Institutional fields can thus be conceived of as structuring particular sets of capabilities that are more or less prevalent than in other fields. Collaboration across institutional fields may thus represent a higher likelihood that the capabilities possessed by collaborators are distinct, and thus more likely to result in higher quality innovation.

H2: Collaboration across institutional fields be associated with more ‘breakthrough’ innovations.

The imperative of breakthrough innovation in ‘green technology’

Green technology innovation is important to achieving both incremental improvements in environmental performance, and in creating more transformational shifts in sociotechnical systems (Geels & Schot, 2007). Developing novel and useful green technologies is also increasingly seen as an important factor in economic competitiveness (Cobourn, 2008). Given projected increases in the markets for green technology, those firms and economies that develop such innovations will likely generate substantial economic value
(Cobourn, 2008). However, there is little scholarly research on what drives green technology innovation. Breakthrough innovation is particularly important in the area of green technology. Technologies that reduce pollution benefit not only their inventor and owner, but also common ecological assets such as the cleanliness of the air or water. Green technology is also potentially inherently disruptive to a number of existing technological and organizational capabilities of major industries. For example, the emergence of low-carbon, renewable sources of energy would threaten many of the existing competencies of some of the world’s largest industries. The oil and gas extraction, transmission, and refining industry’s capabilities would be of diminished value in an economic system that could generate cost-effective energy from solar or wind power. Many of the competencies of the automotive, energy generation/transmission, shipping, and manufacturing industries would also be affected.

Environmental technology industries are also highly susceptible to characteristics of their institutional and geographic environments. Subsidies for both environmental technologies and for existing technologies such as oil, coal, or nuclear power affect the relative cost and potential revenue from these technologies (Johnstone, Haščič, & Popp, 2010). Policies such as feed-in tariffs, carbon caps, guaranteed energy prices, and even the structure of municipal transportation subsidies all can affect the incentive firms have to develop, sell, and purchase environmental technologies. Even geographic features such as the presence of wind and sun can create significant variability in the contextual conditions that either incentivize or disincentivize environmental technology
innovation. Given the evidence suggesting that collaboration is most beneficial when it occurs between parties with distinct capabilities (Sampson, 2007), collaboration across different institutional regimes may be of particular value in developing novel environmental technologies.

Environmental technology is thus a useful context to study the effects of collaboration on quality of innovation and the potential effects of collaboration across institutional contexts. The necessity of disruptive innovation in this area indicates that those innovations that are most breakthrough are also most likely to result in positive externalities and a broader industrial transformation. This provides a good test of the hypothesis that collaboration improves quality of innovation by improving the extent to which collaboration is breakthrough. And the conditionality of environmental technology economics on institutional and geographic factors makes this a good context within which to test the hypothesis that institutionally diverse collaborations result in more high quality innovations.

METHODS

To test the hypotheses that collaboration is associated with more breakthrough green technology innovation, and that collaborations across institutional fields are particularly breakthrough, this study will conduct a quantitative analysis of a combination of patent data, information on green technology types, firm information, and patent information. Patent data has been used in studies of collaboration (e.g., Sampson, 2005; Mowery et al., 1996), and is
an appropriate measure of technological innovation. Below I describe the data, measures, and analytical methods used.

**Data**

I created an integrated dataset by combining four raw, publicly available data sources:

- The National Bureau of Economic Research’s database of all patents granted in the United States between 1976 and 2006 provides detailed information on approximately 3.3 million patents. This database includes – amongst other information - the category in which a patent was classified, the number of citations that patent had received, the entity to which the patent was assigned, and the dates the patent was applied for and granted. (Hall, Jaffe, & Trajtenberg, 2001)

- In December 2009, the United States Patent Office commenced a program that provided for ‘green technology’ patents to receive accelerated review. This program specified a series of patent classifications that could be considered green technology (United States Department of Commerce, 2009). A federal register specified these patent classifications in four green technology categories: alternative energy production, energy conservation, environmentally friendly farming, and environmental purification, protection, and remediation.
- COMPUSTAT provides detailed financial information on publicly listed firms. This data will be used to measure the firm characteristics of publicly listed firms.

- The US Patent Office’s publicly available records on each patent. This data will be used to test whether patents classified as ‘green’ by the USPTO’s 2009 directive should in fact be treated as such.

The NBER, USPTO green technology classifications, and COMPUSTAT data were combined into a single dataset, and then further separated so that solar technology patents formed a distinct dataset. The following is a brief summary of this process:

1) Categorized each of the 3.3M patents as green or not-green technology based on the USPTO directive.

2) Aggregated the patent database so that each company had a record for each year between 1976 and 2006 specifying the number of patents, and the average number of citations received per patent.

3) Retrieved annual financial data from COMPUSTAT for the years 1975-2006 for all companies listed on North American exchanges.

4) Matched financial information to patent information.

5) Labeled all patents according to the particular area of green technology as specified by the USPTO.

6) Identified all patents classified as ‘solar technology’ by the USPTO, and created a separate dataset consisting of just these patents.
Colleagues then repeated this process to ensure reliability of the dataset, and a number of tests were conducted to ensure that the data merging, classification, and labeling was consistent and accurate. More detailed information on the process of aggregating these datasets is available in Appendix A.

Past analysis of this data has revealed that not all patents included in the ‘green technology’ classes should reliably be considered environmental technology. To ensure that I accurately distinguished between patents that should and should not be considered ‘environmental technology’, I focused on the solar power industry. This allowed a more detailed exploration of the patents included in this class, to ensure that patents included in the dataset were consistent with the theoretical interest of breakthrough environmental technology. Solar power met a number of important conditions that made it appropriate to test the hypotheses of this study:

- Sufficiently large sample of inventions in the area (to ensure requisite sample size)
- History of inventions over a sufficient period of time (to enable tracking of citations and other indicators of innovations quality and effective panel data analysis)
- Evidence of disruptive technological innovations within the technology class (to ensure sufficient dependent variable data)
- Degree of practical importance of the technology (to maximize relevance of the study)

Measures

Quality of innovation

I measured quality of innovation using the approach used by prior studies of breakthrough innovation. Similar to scholarly work, patent applications must specify prior work upon which an invention is based. Citations are used to measure which patents are breakthrough (Phene, Fladmoe-Lindquist, & Marsh, 2006). To correct for different citation patterns amongst industries and the time a patent has had to accumulate citations, I applied the multiplier suggested by NBER (Hall et al., 2001). After this adjustment, I followed Phene et al. (2006) and created a binary variable representing whether the particular patent fell in the top 2, 5, 10, or 20% of patents, by adjusted citations.

Collaboration

I used two measures of collaboration, one of which indicated collaborations between firms and one of which indicates the number of individual inventors that collaborated on a particular technology. First, patent records specify the parties to which the rights to a patent are assigned (Hall et al., 2001). The compiled patent database will include information on whether a patent has multiple assignees, which indicates that multiple parties collaborated on the
invention. Patents that have multiple assignees will be considered as having been produced through collaboration between firms. Second, patent records specify the names, and other detailed information regarding the inventors listed on a patent application (Hall et al., 2001). The more inventors listed on an application, the more individuals collaborated in its development. The combination of these two measures will allow an evaluation of collaboration at the firm level, and a broader measure of extent of collaboration on a given technology.

**Inter-institutional collaborations**

To measure whether collaborations across institutional fields is associated with higher quality technological innovation, I measured the number of countries that collaborators (individual inventors) on a patent were from. National boundaries are an effective way of delineating institutional fields, and as described above are critical for environmental technology innovation. Collaboration across multiple countries is used as a measure of effort to integrate capabilities that issue from different institutional fields.

**Controls**

I included two controls in the analyses described below. First, I used controls for the stock of patents a company has, in order to control for the tendency of a company to patent frequently, cite its own patents, and thus inflate the citations received by its patent. Second, I controlled for company size, a measure that has long been linked to technological innovations (Scherer, 1965;
Link, 1980; Schumpeter, 1942), and which may increase the number of self-citations received by a patent.

Analysis

Primary analysis

I applied a logistic regression analysis with the four different binary breakthrough measures (2%, 5%, 10%, and 20%) as dependent variables to generate the primary results. To control for skewed and kurtotic distributions, I log transformed the total assets variable, by adding 1 to each variable (so as to not incorrectly negatively skew zero values), and then taking the log of each figure.

Robustness test

Due to limited control variables for patent quality at the individual patent level of data, I also conducted a robustness test. For the robustness test, I aggregated all variables to the firm level, such that every firm had one entry for each year it patented data. I constructed a dependent variable representing the average quality (average number of citations) of the patents granted to that firm in that year. This firm level data allowed for the use of the patent stock control variable. More importantly, however, the panel data structure allowed for the application of a more stringent, highly conservative analytical method. The data structure and count dependent variable was appropriate for a fixed effects negative binomial regression. Such an approach also has the benefit of controlling for unobserved heterogeneity, which is a highly constrained model that eliminates the need for explicitly including control variables (Hilbe, 2011).
Significant results in this model would create strong confidence in the hypothesized relationships.

RESULTS

Table 1 provides descriptives for the data used in the logistic, patent-level regression. Table 2 provides the results of this logistic regression. The primary measure of collaboration – number of inventors – had a statistically significant effect on all binary measures of breakthrough technological innovation. The secondary measure of collaboration – number of companies to which a patent was assigned – did not have a statistically significant effect on any of the binary measures of breakthrough technological innovation. As such, the tests of hypothesis 1 demonstrated mixed results. The measure of collaboration across institutional fields – international collaboration – did not have a statistically significant relationship with any of the four binary measures of breakthrough technological innovation. As such, the tests showed no evidence for hypothesis 2.

Table 3 provides descriptives and Table 4 provides the results of the fixed effects negative binomial regression on the continuous measure of firm-level average patent quality. This robustness test demonstrated similar results to the primary analysis described above, showing support for the influence of the
inventor measure of collaboration on innovation quality but not showing support for the effect of international collaboration on innovation quality.

Tables 3 and 4 about here

DISCUSSION

Limitations and Future Research

There are a number of limitations of this study. First, it is confined to US solar technology patents, a context which is expressly different than other technology classes, and thus the generalizability of the results – both significant and insignificant – is uncertain. More studies on other technology types, and especially studies comparing green and non-green technology types should be conducted. Second, the measures of this study are limited in their ability to capture and reflect a number of the mechanisms theorized in literature on the relationship between collaboration and innovation. The assignee measure may reflect post-hoc assignment of legal rights to a patent more than an active collaboration in developing the technology behind the patent. Research using formal R&D collaborations on specific projects or technology areas could use more precise measures of firm-level collaboration. The inventor measure is also not a perfect measure of the extent of collaboration on a particular technology. Practices of crediting individuals may vary from company to company, and the number of people working on a technology may conflate collaboration with the
importance or investment a company makes in a given technology. Finally, the measure of innovation quality does not necessarily measure adoption of innovations or their actual influence on industries.

While past studies traded off sample size and quantifiability of both the independent and dependent variables in order to remove potentially conflating variables (Ahuja et al., 2008), this study traded off precision in measures for quantifiability and sample size. In the future, integrating large and small sample studies using mixed methods designs and potential new sources of data may contribute to developing more confident tests of theorized relationships. Future research should also explore the influence of innovation quality on other variables, such as financial or environmental performance of firms or sectors, or the overall growth of an industry. These studies of variables of interest to managers and policymakers will link the theoretical study of collaboration and innovation to the practical imperatives of economic growth and environmental protection.

**Implications**

This study explores and tests a method of using patent data to measure innovation quality quantitatively in a large sample. Results indicate that collaboration between multiple inventors may be associated with more high quality innovations. Surprisingly, tests of the influence of collaboration between firms and across multiple countries did not have any influence on the quality of innovation. This indicates that the combination of distinct capabilities possessed
by individual contributors in a technological innovation project may increase the quality of innovations. For an industry such as solar power in which breakthrough innovation has both economic and environmental consequences, further increasing the extent of collaboration may be an important organizational and policy priority. Companies that bring more people to bear on particular technology innovation projects may also create a proprietary competitive advantage through the creation and patenting of breakthrough innovations.

There was no significant influence of collaboration across national borders. This is surprising, and suggests either that institutional fields do not necessarily generate unique capabilities that can be combined through collaboration, or that the measures used were inadequate. Research across institutional fields in addition to countries – such as sectors – should be conducted to further test this theorized relationship. One potential explanation for the lack of support received for this hypothesis is that this test measured presence of inventors across multiple countries, not collaboration between firms in different countries. Many of the mechanisms theorized for the relationship between collaboration across unique institutional fields and innovation in the solar power industry may have an effect not on individuals but on firms. For example, regulatory regimes may not affect an individual’s technological knowledge, but may affect the incentives and technological capabilities a firm could bring to a collaborative arrangement. Future research using expanded data sources and firm-level measures of collaboration across institutional fields can deepen our insight into the combination of capabilities afforded through collaboration.
Appendix A

Data merging process for patent and Compustat data

Three data sets were used:

- NBER’s database of all utility patents granted in the United States between 1976 and 2006 (PAT). Each case represented one patent-assignee pair, such that some patents that had multiple assignees had more than one case. These duplicate patent entries represent approximately 2% of the total of 3,279,509 cases. This file contains information on each patent including whether the patent was assigned, the type of assignee (unassigned, assigned to US individual, foreign individual, US non-government entity, foreign non-government entity, US government, or foreign government), number of citations the patent has received, and the technological classification of the patent.

- NBER’s database of all public companies that had been assigned patents in the 1976-2006 period (ASSG). This database takes into account the various mergers, acquisitions, and other reorganizations that a corporate entity had undergone over the period of relevance to the patent database. It maps a unique assignee code (also present in the above utility patent database) with a timeline specifying a unique identifier (‘gvkey’, which corresponds with Compustat data) and the years for which that identifier was relevant.

- The Compustat database of annual North American fundamentals for the period 1976-2006 (COMP). Compustat allows for retrieval of a wide range of
company information and financial data, and key variables used in this study, as well as other identifying information, was retrieved. The COMP file had one entry for every year a particular company was publicly listed.

**Data Merging Process**

In order to create a usable data set for statistical analyses, the above three data sets were combined, using the following process:

1. First PAT was combined with ASSG using the SPSS merge function, using ASSG as an indexed table. These two data sets were matched using the unique assignee identifier present in both. The result was one data set that included one file for every patent-assignee pair, and ranges of usable gvkey indicators.

2. In this merged PAT-ASSG file, a new variable was created using if statements in SPSS that found the gvkey that matched with the period of the patent application data.

3. An identifier was then created that would match with the appropriate entry in the COMP file. This identifier was a concatenation of the gvkey identifier and the year of the patent application.

4. A corresponding identifier was created in the COMP file. This identifier was a concatenation of the gvkey identifier and the year of that case.

5. Then, the PAT-ASSG file was combined with the COMP file using the SPSS merge function, using COMP as an indexed table and the
concatenated year-gvkey variable as the unique identifier. This resulted in a combined data set that included one case for each patent-assignee pair, information about the patent, and – for all assignees that were publicly traded in the United States in the year of the patent application – the company information retrieved from Compustat.

**Dummy Variables**

A number of dummy variables were created for use in subsequent analyses:

- **Firm information quartiles.** Dummy variables were created to represent quartiles for each of the four firm information variables; current assets, revenue, net income, and number of employees. All cases that did not have assignees or for which the assignees did not have Compustat information for the year of the patent application were assigned a ‘0’ value for these variables, others were assigned a 1, 2, 3, or 4 representing the appropriate quartile.

- **Green technology class.** A dummy variable was created representing whether a patent was in a class considered a green technology by the United States Patent Office. In 2009 a program was commenced by the USPTO to allow fast-tracking of the patent approval process for green technologies. This program specifies the technology classifications that were considered eligible for this fast-track program. The technology classes were split into four overall categories: alternative energy production, energy conservation, environmentally friendly farming, and environmental protection, conservation, or remediation. While not all of the patents that fall in these
technology classes would be considered by all to be green technology, a
review of the specific sub-classes shows that a majority of these patents can
be considered green technologies. The dummy variable was based on a
variable included in the original PAT file that specified the technology class
according to the USPTO’s current classification, as updated by NBER from
the original technology classification to reflect changes in classification
systems since the original date the patent was granted. The dummy variable
was either 0 (representing not green technology), 1 (alternative energy
production), 2 (energy conservation), 3 (environmentally friendly farming), or
4 (environmental protection, conservation, or remediation).

Data Verification

To ensure that the above data merging process worked correctly, two methods
were used:

- Given that both the year and gvkey variables were duplicated in the
  merged files (year from the original PAT file, gvkey from the ASSG file, and
  both gvkey and year from the COMP file), new variables were created to test
  whether these matched. All gvkeys and years for which there was information
  in Compustat matched.

- In addition, using Excel, twenty random numbers were generated between
  1 and 3,279,509. Each case with a row matching the generated number was
  checked. Using Google Patents, the original patent file from the USPTO was
checked, to ensure the assignee information matched that recorded in the database. If the patent was assigned, the assignee was checked using online sources. If the assignee was a publicly traded company, the financial information present in the merged PAT-ASSG-COMP file was matched to annual reports or other sources of corporate information for the year of the patent application. All information was consistent for the 20 entries examined.
Table 1
Descriptive statistics and correlations for patent level data and binary outcome variable

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>M</th>
<th>S.D.</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Inventors</td>
<td>4271</td>
<td>1.717</td>
<td>1.222</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. International collaboration</td>
<td>4271</td>
<td>0.009</td>
<td>0.093</td>
<td>0.117</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Total assets (ln)</td>
<td>906</td>
<td>8.325</td>
<td>2.460</td>
<td>0.216</td>
<td>0.026</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Assignees</td>
<td>2577</td>
<td>1.018</td>
<td>0.132</td>
<td>0.103</td>
<td>0.096</td>
<td>0.038</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Breakthrough 2%</td>
<td>4271</td>
<td>0.020</td>
<td>0.140</td>
<td>0.133</td>
<td>-0.022</td>
<td>0.036</td>
<td>0.042</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Breakthrough 5%</td>
<td>4271</td>
<td>0.050</td>
<td>0.218</td>
<td>0.170</td>
<td>0.000</td>
<td>0.051</td>
<td>0.051</td>
<td>0.627</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Breakthrough 10%</td>
<td>4271</td>
<td>0.100</td>
<td>0.500</td>
<td>0.177</td>
<td>-0.035</td>
<td>0.071</td>
<td>0.017</td>
<td>0.429</td>
<td>0.868</td>
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</tr>
<tr>
<td>8. Breakthrough 20%</td>
<td>4271</td>
<td>0.200</td>
<td>0.400</td>
<td>0.218</td>
<td>0.010</td>
<td>0.051</td>
<td>-0.016</td>
<td>0.291</td>
<td>0.465</td>
<td>0.678</td>
</tr>
</tbody>
</table>

Table 2
Logistic regression on four binary dependent variables

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>Dependent Variables</th>
<th>Top 2% by citations</th>
<th>Top 5% by citations</th>
<th>Top 10% by citations</th>
<th>Top 20% by citations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inventors</td>
<td></td>
<td>0.312***</td>
<td>0.291***</td>
<td>0.264***</td>
<td>0.314***</td>
</tr>
<tr>
<td>International collaboration</td>
<td></td>
<td>0.597</td>
<td>-1.248</td>
<td>-0.241</td>
<td></td>
</tr>
<tr>
<td>Assignees</td>
<td>0.995</td>
<td>0.79</td>
<td>0.073</td>
<td>-0.972</td>
<td></td>
</tr>
<tr>
<td>Total assets (ln)</td>
<td>0.028</td>
<td>0.029</td>
<td>0.046</td>
<td>0.005</td>
<td></td>
</tr>
<tr>
<td>R Squared</td>
<td>0.049</td>
<td>0.043</td>
<td>0.015</td>
<td>0.039</td>
<td></td>
</tr>
</tbody>
</table>

* p < 0.05  
** p < 0.01  
*** p < 0.001

Table 3
Descriptive statistics and correlations for robustness test

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>M</th>
<th>S.D.</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Inventors</td>
<td>445</td>
<td>2.25</td>
<td>1.52</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. International collaboration</td>
<td>442</td>
<td>0.04</td>
<td>0.26</td>
<td>0.177</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Patent stock</td>
<td>445</td>
<td>16.43</td>
<td>22.41</td>
<td>0.134</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Total assets (ln)</td>
<td>443</td>
<td>7.61</td>
<td>2.58</td>
<td>0.280</td>
<td>0.062</td>
<td>0.298</td>
<td></td>
</tr>
<tr>
<td>5. Citations (ln)</td>
<td>428</td>
<td>2.13</td>
<td>0.82</td>
<td>0.142</td>
<td>0.049</td>
<td>0.079</td>
<td>-0.010</td>
</tr>
</tbody>
</table>

Table 4
Robustness test using fixed effects negative binomial regression on continuous outcome variable

<table>
<thead>
<tr>
<th>Independent Variables / Controls</th>
<th>Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inventors</td>
<td>0.071*</td>
</tr>
<tr>
<td>International collaboration</td>
<td>-0.003</td>
</tr>
<tr>
<td>Assignees</td>
<td>-0.039</td>
</tr>
<tr>
<td>Total assets (ln)</td>
<td>0.029</td>
</tr>
</tbody>
</table>

* p < 0.05  
** p < 0.01  
*** p < 0.001
References


