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Bill McKibben's Effect on the US Climate Change Debate: Shifting the Institutional Environment through Radical Flank Effects

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"…we need to view the fossil-fuel industry in a new light. It has become a rogue industry, reckless like no other force on Earth. It is Public Enemy Number One to the survival of our planetary civilization." (McKibben, 2012: 57)

"*…every new position, in asserting itself as such, determines a displacement of the whole structure and that, by the logic of action and reaction, it leads to all sorts of changes in the position-takings of the occupants of the other positions.*" (Bourdieu, 1993: 58).

In 2012, environmental activist Bill McKibben published a wholesale broadside in *Rolling Stone* magazine against the fossil-fuel industry and its contributions to climate change (McKibben, 2012). In that article, he introduced the idea of "divestment" to what had become an extremely contested debate in the United States. Modelled on past successful campaigns for divestment from Apartheid South Africa, Sudan, and Northern Ireland as well from the tobacco industry in the United States (Apfel, 2015), he called upon investors (most notably those managing college and university endowments) to liquidate their stocks, bonds, and investment funds from companies involved in the extraction of fossil fuels. In a coordinated move, 350.org, the environmental non-profit group that McKibben helped organize, launched its *Go Fossil Free: Divest from Fossil Fuels! Campaign* with a stated goal to "revoke the social license of the fossil fuel industry" by "keeping carbon in the ground" (350.org webpage). With the help of activist college students, the stated objective of this movement was to stigmatize fossil fuel companies such that future cash flows would become uncertain and share prices would be negatively and materially impacted.

1

In the ensuing four years, the obvious metrics by which the movement could be judged point to a failure to reach its objectives. They "have persuaded only a handful of big institutions to sell off the coal, oil and gas holdings in their endowments. They've had little or no direct effect on publicly-traded oil companies like Chevron and ExxonMobil, and none on the government-owned oil companies of Saudi Arabia, Venezuela, Iran and Iraq that are shielded from chants of rag-tag college students telling them to 'leave it in the ground'" (Gunther, 2015). Some have assessed the financial impact of fossil-fuel divestment to be minimal (Ritchie & Dowlatabadi, 2014).

But, in terms of shifting the public debate over climate change, this movement may have had a pronounced effect. By staking out the "radical flank" (Haines, 1984), McKibben and 350.org presented an extreme position in comparison to others in the climate change debate. Namely, where others argued for industry-wide controls on carbon (through a carbon price) without demonizing any particular industry, McKibben's radical flank employed an extreme discursive strategy of portraying the fossil-fuel industry as a public enemy and calling for it be out out of business. The campaign expanded the spectrum of the climate change debate and shifted its central focus in both direct and indirect ways.

This example illustrates an important element of our understanding of institutional change. While social movements engage in field-level debates over contested issues (like climate change), seeking to gain legitimacy for their interests and arguments (Lounsbury, Ventresca, & Hirsch, 2003), much of the attention within the literature has focused on direct interactions between activists and firms, such as managerial responses to boycotts (Eesley & Lenox, 2006; King, 2008; McDonnell, King, & Soule, 2015), or the legitimation of alternative business models (Schneiberg, King, & Smith, 2008; Sine & Lee, 2009; Vasi, 2011; Weber, Heinze, & DeSoucey,

2008). But social movement actors can shift field-level debates by less direct means, as when

they remain on the fringe of such debates and compel change by the strategic introduction of

extreme and radical issues. This indirect effect shifts the structure of field-level debates, giving

legitimacy to certain issues and ideas by bringing them closer to the center through the "radical

flank" effect (Haines, 1984, 2013; Gupta, 2002; Truelove & Kellogg, 2016; Baron, Neale & Rao,

2016).

This kind of field restructuring becomes particularly important in deeply polarized and

stalled debates where incumbents are unlikely to be open to engaging with and adopting

challenging ideas, which are often central to reform processes (Fligstein & McAdam, 2012;

Lounsbury et al, 2003; van Wijk et al, 2013). To explore this context further, we examine the

radical flank as one possible mechanism for field restructuring, offering additional insights into

the dynamics by which field-level debates shift and change.

In the rest of this paper, we present our theoretical model for the role of radical flank

effects in shaping institutional environments, building upon and extending the concept as first

developed by Haines (1984). We then describe our empirical context of the U.S. climate change

debate and the divestment movement, present the methodologies and results of our longitudinal

network analysis of that context, and discuss the implications of this work for both theorizing

new dimensions of institutional change and understanding the shifting climate change debate

within the United States.

Theorizing Radical Flank Effects on Field-level Debates

The organizational field is "a community of organizations that partakes of a common

meaning system and whose participants interact more frequently and fatefully with one another

3

than with actors outside the field" (Scott, 1995: 56). It may include constituents such as the government, critical exchange partners, sources of funding, professional and trade associations, special interest groups, and the general public – any constituent which imposes a coercive, normative or mimetic influence on the field (DiMaggio & Powell, 1991; Scott, 1991). The concept of an organizational field helps us to understand how organizations define themselves and make decisions in relation to collective meanings and enduring patterns of interaction (DiMaggio & Powell, 1983). Organizational action becomes a reflection of the perspectives defined by the group of members which comprise the institutional environment (Scott, 1995). This social dynamic commonly leads to the reproduction of organizational outcomes, as when a new technology startup relies on independent contractors for many of its operations because that is the norm in the tech field and it matches funders' expectations (Wingfield, 2016).

But fields also contain divergent perspectives on specific issues (Dutton & Ashford, 1993), taking the form of lively and contested debate (Hoffman, 1999). The field is not a collective of homogenous actors, but an intertwined constellation of actors who hold differing perspectives and competing logics with regard to their individual and collective purpose (McCarthy & Zald, 1977; Fligstein & McAdam, 2012). Rather than locales of isomorphic dialogue, fields are contested, as in a "field of struggles" (Bourdieu & Wacquant, 1992) where constituents are "engaged in a war" (Calhoun, 1993: 86). The essence of a field then is its ability to serve as the "relational space" where organizations have the opportunity to involve themselves with one another (Wooten & Hoffman, 2008), defining their position in relation to others and encouraging the maintenance and even intensification of divergent identities (Meyer & Staggenborg, 1996; White, 1981).

4

Within such contested domains, organizational self-interests and agency (Covaleski & Dirsmith, 1988; DiMaggio, 1988; Perrow, 1985) allow some actors to act strategically towards institutional pressures and become what might be called institutional entrepreneurs (DiMaggio, 1988; Fligstein, 2001; Zucker, 1988; Lawrence, 1999). Numerous studies have sought to clarify the means by which these actors seek to assert their interests within field-level debates. Oliver (1991) suggested that organizations craft strategic responses and engage in a multitude of tactics when confronted with the pressures presented by the institutional environment. Greenwood and Hinings (1996) developed a framework for understanding how the internal interests and conflicts of an organization's members influence the organization's response to institutional pressures. Lawrence and Suddaby (2006) provided a typology of the different types of activities that actors engage in to create, maintain, and disrupt institutions.

Each of these models offers fairly purposeful strategies and tactics that are geared towards the direct influence of field-level norms and beliefs. But not all institutional agency is so targeted and directly consequential. In this paper we seek to examine the indirect dynamics by which certain social movement actors shift field-level debates, not by asserting the legitimacy or dominance of their own issues, but rather by legitimating the issues of others as a byproduct of their presentation of more extreme positions that make prior ideas seem reasonable in comparison.

Social Movements and Institutional Change

Institutional theorists have investigated social movement processes as a way to understand change in organizational fields, focusing attention on the ability of social movements to give rise to new fields and alter the composition of existing fields (Davis et al, 2005;

5

Schneiberg & Lounsbury, 2008; Rao, Morrill, & Zald, 2000; Swaminathan & Wade, 2001). One research stream has studied the reform of practices at incumbent organizations. For example, boycotts threaten corporate reputations, which can trigger revisions to corporate policies and the dedication of resources to managing stakeholder concerns (Eesley & Lenox, 2006; King, 2008; McDonnell et al, 2015). Another stream has examined the fertilization of fields with alternative organizational models, such as movements inspiring entrepreneurs to form alliances like those between the environmental movement and early producers of grass-fed beef (Schneiberg et al, 2008; Sine & Lee, 2009; Vasi, 2011; Weber et al, 2008). Yet another stream investigates the possibility for restructuring entire fields, as when recycling activists delegitimized waste-to-energy incineration and introduced a market for recycling, which dominant companies subsequently adopted (Lounsbury et al, 2003). As two final examples, the DDT market was banned in the U.S. when critical scientists teamed up with the early environmental movement (Maguire & Hardy, 2009), and Dutch environmentalists shifted the tourism industry towards more sustainable practices by engaging in a prolonged process of "mutual cooptation" with specific tourism businesses (van Wijk et al, 2013).

Two important conditions appeared to have enabled all of these field transformations. First, the field's debates had not yet fully matured or become linked to partisan and polarized identities. As a result, mainstream actors had not yet developed strongly anchored positions. This absence provided a foothold for new perspectives that linked the issues to deeply held values, such as thrift, safety, economic growth, or efficiency. Second, incumbent organizations were able to accommodate and often profit from field-level changes by offering lucrative alternatives, which catalyzed the reforms. These two conditions made fields more flexible and open to change.

6

In this paper, however, we seek to explore a domain in which the field is not so flexible and could be better described as ossified, where contested issues are so mired in polarized debate that organizations face steep costs if they choose to reform them. In such circumstances, influence is exceedingly difficult because incumbents hold strongly to an issue position and defend it against any challenge (Amenta et al, 2010; Heberlein, 2012; Hoffman, 2011). Some may look to the context of partisan politics in the United States at the time of this writing as an example, with Republicans and Democrats discussing opposing frames for common issues, using different logics and even different facts to support their position and demonize the other's. With time, as extreme positions dominate the conversation, the potential for discussion or resolution disintegrates, and debate becomes intractable.

In contexts of such entrenched positions, direct transmission of movement issues is unlikely to spread outside of activist circles. Each faction in a well-worn debate rejects ideas associated with rivals, as the messenger matters as much as the message (Hoffman, 2015). This impasse also reflects the relational nature of fields: positions are defined in opposition to each other. We turn to the concept of radical flank effects to understand how institutional change is possible in these inhospitable conditions.

The Radical Flank Effect and Institutional Change

The ability of field-level movements to operate as change agents is often influenced by the presence of more radical groups that alter the scope, form and structure of debate (Haines, 1984). Freeman (1975) for example, has argued that mainstream reformist women's organizations, such as the National Organization for Women (NOW), would have been dismissed as extreme in the late 1960s had it not been for the actions and rhetoric of more radical

7

lesbian and socialist feminists whose presence improved NOW's standing and bargaining position. Others have applied this concept and similar argumentation to domains as varied as private politics (Baron, Neale & Rao, 2016), technology development (Truelove & Kellogg, 2016), homeless advocacy (Cress & Snow, 2000), activism targeting governments (Downey & Rohlinger, 2008), and corporate social change (Den Hond & De Bakker, 2007).

In this paper, we seek to apply and extend this concept within the domain of the public debate over the issue of climate change. We begin by defining radical flanks as comprising both *actors* and the *issues* that they espouse. The mechanism that these actors trigger is based on the differentiation of social movements into factions that lie along a spectrum from radical to moderate positions or from confrontational to collaborative postures (Hoffman, 2009; Downey & Rohlinger, 2008). As such, the term "radical" is not meant as a descriptor of violent tactics per se, but rather that the discursive issues that the actors present are on the extreme end of the debate spectrum, hence radical. This differentiation can yield both negative and positive outcomes (Gupta, 2002).

The more radical organizations in the movement may have a *negative radical flank effect* on moderate groups by creating an associative effect and a backlash among opposing groups. In such cases, all members of a movement are viewed in the same way as the more visible radical members, thus discrediting movement activities and goals and "threatening the ability of moderate groups to take advantage of the resources available from supportive third parties" (Haines, 1984, 32). "Even if moderates and radicals embrace considerably different goals and tactics, their coexistence and common identification as members of the same movement field reflects badly on the moderates and harms their ability to achieve their objectives" (Gupta, 2002, 6). Often, this negative effect can be driven by more violent or illegal actions that garner

8

unfavorable attention and allow opposing interests to frame the entire movement in a delegitimizing light. So, for example, when an environmental extremist group creates headlines for a terrorist act, all environmental groups may be viewed in the same light, thus limiting their ability to operate as legitimate members of field-level debates.

Conversely, the more radical organizations in a movement may have a *positive radical flank effect* on moderate groups by creating a comparison effect (Haines, 1984). When members of a social movement are viewed in contrast to other participants, the extreme positions from some members can make other organizations seem more palatable to movement opponents and bystanders (McAdam, 1992). They do this in one of two ways: "the radicals can provide a militant foil against which moderate strategies and demands are redefined and normalized — in other words, treated as 'reasonable.' Or, the radicals can create crises which are resolved to the moderates' advantage" (Haines, 1984: 32). For example, when Martin Luther King Jr. first began speaking his message in the 1960s, it was perceived as too radical for the majority of white America. But when Malcolm X entered the debate, he extended the radical flank and, as a result, made King's message look moderate by comparison. Similarly, Russell Train, second administrator of the EPA, articulated the positive radical flank effect in the 1970s when he quipped, "Thank God for the David Browers of the world. They make the rest of us seem reasonable" (U.S. EPA, 1993).[i]

Although much cited, little research has tested the radical flank model and the primary evidence supporting it concerns foundation funding for civil rights organizations (for an exception, see Truelove & Kellogg, 2016). In addition to a shift in financial resources, cultural consequences are especially plausible as cultural logics underly the radical flank mechanism. Funding increased to older civil rights groups because an expansion of the radical flank made the

9

erstwhile radicals *appear* more moderate in comparison (Freeman, 1975; Snow & Cross, 2011; Haines, 1984). Similarly, studies of institutional change point to the ways in which the emergence of new actors triggers incumbents to revise their strategies and relationships (Fligstein & McAdam, 2012). For example, the participation of insurance companies in the field-level debates about environmental protection in the mid-1990s led manufacturers to adopt more proactive stances that included cooperation with more moderate environmental non-governmental organizations (NGOs) (Hoffman, 1999).

The relational principle that underlies the radical flank effect fits with early institutional theories in which organizational fields encompass far more than a simple list of constituents, conflict is a central element of field level dynamics and vested interests become sources of inertia (Hirsch & Lounsbury, 1997; Selznick, 1949). In this early work, the field is not a discrete set of direct resource ties, but is instead a relational space that attends to how each organization's position is defined by its relationship to the entirety of the field. Hargrave and Van de Ven (2009), for example, examine the writings of Chicago community organizer Saul Alinsky to explore how the actions and tactics of some institutional actors are dependent on the actions of other actors within the field when seeking to disrupt institutions. In one telling description, Alinsky writes "The real action is in the enemy's reaction…the enemy properly goaded and guided in his reaction will be your strength (Hargrave & Van de Ven, 2009: 132). Reiterating the idea that opened this paper: "…every new position, in asserting itself as such, determines a displacement of the whole structure and that, by the logic of action and reaction, it leads to all sorts of changes in the position-takings of the occupants of the other positions" (Bourdieu, 1993: 58). By linking radical flank effects to the literature on institutional change, we anticipate two outcomes.

10

Our first expectation is that the emergence of a radical flank will cause greater attention to flow to previously radical issues. For clarity, we refer to these eclipsed positions as peripheral issues. The expansion of the radical flank softens opposition to peripheral issues, making them appear to be a moderate alternative to the issues introduced by the new radical flank actors (Haines, 1984; Snow & Cress, 2000; Baron et al, 2016). This acceptance translates into greater attention, which is the key resource in the arena of public discourse (Hilgartner & Bosk, 1988) and the lifeblood of social movements (Lipsky, 1968). As mainstream actors engage with a previously peripheral issue, it becomes accepted as a necessary perspective to consider and from which to judge alternative issues (Bail, 2012). What was once marginalized, now becomes a touchstone in the debate.

Our second expectation is that central and mainstream actors will attempt to domesticate radical issues by translating them into concepts that fit more readily with the rhetoric of their own field-level positioning. This process has two mechanisms. First, incumbents respond to social movements that gain attention by seeking to coopt them. Powerful organizations that benefit from the status quo attempt to integrate movement concerns in a way that neutralizes their disruptive potential (Gamson, 1975; Konefal, 2012; Trumpy, 2008). Second, critical voices closer to the center of a debate may make use of radical ideas to elaborate their own positions. A positive radical flank effect unlocks incumbent resources for the old radicals, but it can also undermine this group's standing as a challenger of prevailing practices (Benford, 1993). To remain a critical voice requires the refashioning of elements of the expanded radical flank to make them acceptable to the older concerns of the eclipsed radical (Jung, King, & Soule, 2014). For example, since the emergence of a protest wing of the civil rights movement, the NAACP has managed concerns about appearing too conservative by attempting to incorporate more

11

radical issues where possible. This dynamic is occurring again in reaction to the Black Lives Matter movement, as evident in the NAACP's adoption of the theme "Our Lives Matter, Our Votes Count" for its annual convention (Lartey, 2016). Likewise, Bernie Sander's radical challenge in the 2016 US Presidential election pushed Hillary Clinton's campaign to develop more moderate variants of some of his radical issues, as in her adoption of stronger standards for trade deals. In short, radical flank actors can bring legitimacy to previously peripheral ideas by presenting more extreme issues that widen the locus of debate but are unlikely to become accepted themselves.

Divestment and the Climate Change Debate

The focus of our study centers on the U.S. debate over climate change in the early 2000s, a period of conflict that approximates the kind of "field of struggles" (Bourdieu & Wacquant, 1992) or institutional war (Calhoun, 1993) previously described. A study by the Pew Research Center (Funk & Rainie, 2015) found an alarming chasm between the views of scientists and the views of the public on the reality of climate change (as well as many other issues).

On the one hand, the scientific community has reached a consensus that "Warming of the climate system is unequivocal, and since the 1950s, many of the observed changes are unprecedented over decades to millennia. The atmosphere and ocean have warmed, the amounts of snow and ice have diminished, sea level has risen, and the concentrations of greenhouse gases have increased…It is extremely likely that human influence has been the dominant cause" (IPCC, 2014). This view has received the endorsements of nearly 200 scientific agencies around the world, including the scientific agencies of every one of the G8 countries (Joint National Science Academies, 2005).

12

On the other hand, surveys find that only 63% of Americans "believe that global warming is happening," only 49% believe global warming – if it is happening – is caused mostly by human activities, and 30% believe it is due mostly to natural causes (Leiserowitz et al, 2013). Social scientists have found that the traditional demographics for climate change belief mirror those for environmental concern in general. But political party affiliation is found to be the strongest correlate with individual beliefs about climate change. In studies based on Gallup data, the percentage of Republicans who believe that "the effects of global warming have already begun" declined from 49% in 2001 to a low of 29% in 2010 before oscillating between 34-41% from 2011-2016, while the corresponding percentage for Democrats increased from 61% in 2001 to a high of 76% in 2008 and has since bounced between 63-75% (Dunlap, McCright, & Yarosh, 2016; McCright & Dunlap, 2011). Moreover, across several key questions about the existence, causes, scientific certainty, and threat of global warming, partisan divides have expanded over time (Dunlap et al, 2016).

This partisan split has created a social and institutional debate that some view as becoming intractable; devolving into a "cultural schism" where opposing sides debate different issues, seek only information that supports their position and disconfirms the other's, and begin to demonize those that disagree with them (Hoffman, 2011, 2015). With time, positions could become relatively rigid and exclusive, thickening boundaries among cultural communities. Pielke (2007) compares the extreme of such schisms to "abortion politics" where those opposing abortion frame it as an issue of "life," those favoring abortion frame it as an issue of a woman's "choice," and each side invokes broader logics around religion, family, and freedom to support their views. The result is that "no amount of scientific information…can reconcile the different values" (Pielke, 2007: 42).

13

Such polarization has yielded a stalemate in the political debate over appropriate responses and the marginalization of liberal policy ideas, most notably a carbon price. In 2009, House voting on the American Clean Energy and Security Act (otherwise known as the Waxman-Markey Bill), which would have established an emissions trading program for greenhouse gases, fell largely along party lines with most Republicans opposed. In March 2011, every one of the 31 Republican members of the House Energy and Commerce Committee declined to vote on the simple idea that climate change exists. In the 2012 U.S. Presidential election, all four of the Republican primary candidates presented climate science as inconclusive or wrong. In the 2016 Presidential election, eight of the eleven Republican candidates did the same and the elected Republican President has questioned the reality of the issue.

Into this standstill, Bill McKibben and 350.org introduced their notion of divestment. This radical flank movement mobilized students to pressure their colleges or universities to liquidate their investments in fossil fuel companies in order to mitigate climate change. The divestment idea staked out a more extreme position in the environmental debate by calling for the cessation of fossil fuel investments and ultimately their use, rather than the increased adoption of renewable energy or cleaner forms of fossil fuels. McKibben argued that the campaign's goal was to stigmatize fossil fuel companies, so that they would lose their social license to operate. It was an intervention at a time when politicization had created strongly divided camps that were unwilling to consider the other's positions. As such, this particular context presents an "extreme case," one in which the process of theoretical interest is more transparent than it would be in other cases (Eisenhardt, 1989). It is thus well-suited to build our knowledge of the cultural effects of social movements and to test the radical flank effect.

14

Data & Methods

In order to test our model of radical flank effects on institutional debate, we compiled a dataset of news coverage about climate change. As part of a larger project, we collected 286,224 articles from LexisNexis that mentioned either "climate change" or "global warming" and that relate to the U.S. from 2005-2015. Next we extracted the subset of articles since 2011, when the divestment campaign began. We kept only the articles that came from U.S. news sources that were present across 2011-2015 in order to avoid biases due to changes in the sources available in LexisNexis. The result was a final dataset of 42,072 articles encompassing the climate change debate as reported in nearly 300 newspapers. The top three sources were the *New York Times*, *Washington Post*, and *San Jose Mercury News*.

Given the large volume of text, we developed a series of computational text analytic methods to map the influence of the radical flank effect. We sought to examine changes over time in the actors and issues connected to climate change in order to test how the emergence of a radical flank affected the broader debate. As described below, we pursued this goal by assessing trends in the prevalence of particular actors and issues, as well as in the network positions of these entities. These methods are based on a rapidly growing methodological tradition of computer-assisted text analysis (Brier & Hopp, 2010; Popping, 2000) and more specifically network text analysis (Carley, 1997; Martin, Pfeffer, & Carley, 2013).

To identify actors we processed our corpus with a named entity recognition program which was designed to match the data. By searching for proper names and acronyms, this program generated a list of persons and organizations. We then inductively coded the 1,250 most common actors into eight types: academic, business, celebrity, government, media, NGO, religious, and other. After dropping the celebrity and other categories, in order to reduce

references to climate change from entertainment articles and other noise in the data, we focused our analysis on 1,027 prominent actors from the remaining six groups. We identified Bill McKibben and 350.org as the core actors in the radical flank. We also considered the role of Naomi Klein, who prominently advanced an anti-capitalism message (Klein, 2014), and we analyze this comparison in the discussion.

To measure the prevalence of key issues, we drew on our subject knowledge to create a list of thirty-two issues from across the ideological spectrum. Shown in Table 1, there were eight issues that were commonly linked to the conservative debate over climate change (McCright & Dunlap, 2000), fourteen issues that were commonly linked to liberal efforts to address climate change, and ten issues that we associated with the efforts of the radical flank. The assignment of these issues to ideological positions was specific to the climate change debate in the U.S., where the conservative position was anchored in denial, the liberal position was associated with policy response, and the emergent radical position called for the abolition of fossil fuels. We tracked each issue with multiple phrases that we matched against the corpus. For example, the "cap and trade" issue could have been matched with the eponymous phrase, "carbon permits," or "carbon trading."[ii]

INSERT TABLE 1 ABOUT HERE

Our subsequent analysis followed three steps. First, we traced the emergence of the radical flank in the debate by examining counts of articles which included the central radical actors (McKibben and 350.org) and issue (divestment), and the percentage of articles with divestment that also included McKibben or 350.org. For this step, we used months as the unit of

observation and then smoothed the scores into three-month moving averages. Second, we examined how the radical message of divestment dispersed into the broader debate. In order to detect the additional actors and issues that became linked to divestment, we calculated the overlap between divestment and all non-radical actors and issues at the sentence-level, using a window of plus/minus one sentence to count co-occurrences. Third, we investigated shifts in the overall shape of the debate. With a positive radical flank effect, increased attention to radical issues should trigger the movement of liberal issues that had previously been considered radical into the center of the debate, where they would now be received as reasonable. For this step, we used calendar quarters as the unit of observation and constructed a network of actors and issues, constructing ties when two items co-occurred in more than one sentence. We then created and analyzed network diagrams as well as eigenvector centrality for key actors and issues, using UCINET (Borgatti, Everett, & Freeman, 2002). The eigenvector measure is well-suited to capturing overall network position because it calculates a node's centrality based on the centrality of the nodes that are linked to it. Results were consistent with Jaccard and Dice measures of association, as well as article-level and paragraph-level measurement windows.

Results

Figure 1 presents data on the emergence of the radical flank. News attention to the key actors and issues in the radical flank generally grew across the 2011-2015 time period. Although the divestment campaign began in 2011, news stories connecting divestment to the radical flank did not appear until the fall of 2012. This media development followed an expansion in the campaign that spring and the publication of McKibben's widely-read *Rolling Stone* article that summer (McKibben, 2012), which received more than 5,000 comments and over 120,000 likes

17

on Facebook (Nisbet, 2013). As the divestment issue became more prominent in the climate change debate, it also entered into wider domains detached from the actors that introduced it. November 2012 was the peak of the association between the radical actors and divestment, when almost 75% of divestment articles also featured McKibben or 350.org. By the average month in 2013, less than one-third of articles discussing climate change and divestment included mentions of McKibben or 350.org. By 2015, this figure dropped to 12% as the preponderance of attention to divestment occurred outside of the radical flank.

INSERT FIGURE 1 ABOUT HERE

Table 2 displays the top ten actors who became most associated with divestment outside of the radical flank. We identified this group using Jaccard scores calculated across the time period. The Jaccard measure captures the frequency with which two items co-occur, controlling for how often each item occurs overall. Especially prominent are targets of the divestment campaign from business and academic backgrounds. For example, attention focused on fossil fuel companies like Exxon Mobil and Chevron, and universities like Stanford and Harvard.

INSERT TABLE 2 ABOUT HERE

Next we analyzed networks that capture how the structure of the debate changed over time. Following our previous finding, we simplified our analyses by constructing separate networks for business and academic actors. Each set of networks also included NGOs and

18

ideological issues. The results from each set of networks are similar, so we focus on the business networks and note differences from the academic networks where relevant.

Examining networks of issues, businesses, and NGOs, Figures 2-4 depict dramatic changes in the climate change debate. Each node is an actor or issue, coded by color and shape. At the start of the time period (2011 Q1 in Figure 2), before the radical flank gained extensive attention, business actors occupy the center of the network, and NGO actors and liberal issues are spread outside the center. Bill McKibben and 350.org are peripherally attached. Corresponding to the results in Figure 1, divestment is not part of the conversation. A few conservative issues (e.g., big government and hoax) are highly central, and a couple of liberal issues (national security and cap and trade) and radical issues (capitalism and social justice) are moderately central. By the fourth quarter of 2012 (Figure 3), after the divestment campaign and McKibben's *Rolling Stone* article had begun to draw considerable popular attention, the main components of the radical flank (McKibben, 350.org, and divestment) have clustered off the center of the network. Moreover, there is a distinct movement of select liberal issues into the center, particularly carbon tax, cap and trade, severe weather, and carbon pollution. One year later (2013 Q4 in Figure 4), the evolution of the radical flank has progressed to the point that the radical flank cluster expands with ties to the additional radical issues of carbon bubble and "stay in the ground." Another radical issue, stranded assets, also emerges but is detached from the radical flank cluster. At the same time, the core liberal issues from the prior diagram become further entrenched in the center of the network, and additional liberal issues such as carbon price, carbon capture, adaptation, and mitigation become noticeably more connected. Also, conservative issues increasingly drift out towards the periphery across the three figures.

In network diagrams not shown, the corresponding academic networks follow the same temporal evolution of the emergence of a radical flank linked to growing centrality for liberal issues. One difference is that the clustering trend among liberal and radical issues is stronger in the academic network, perhaps indicating greater ideological coherence. There are also minor variations in the positioning of individual issues. For example, island nations and carbon budget occupy a more central place in the academic network, while cap and trade and carbon bubble are more central to the business network.

To better understand this progression, we analyzed trends in the eigenvector centralities of key actors and issues in the business networks depicted above. Figure 5 charts trends in the average centrality of the radical flank (McKibben, 350.org, and divestment) as well as of liberal and conservative issues. Prior to the second half of 2012, conservative and liberal issues share a moderate level of centrality, while the radical flank occupies a more peripheral position. Transitioning from 2012 into 2013, the radical flank and liberal issues rise dramatically to dominate the network. Despite a slump from 2014 Q4 to 2015 Q2, these two groups hold a more elevated place in the network throughout the remainder of the time period. Interestingly, the correlation between these two trends is 0.57, while the conservative-liberal association is nonexistent ($r = 0.01$) and the radical flank and conservative trends are negatively correlated ($r = -0.28$). In the corresponding academic networks, the radical flank-liberal association is nearly identical ($r = 0.50$), while the conservative-liberal correlation becomes strongly negative ($r = -0.49$) and the conservative-radical flank opposition intensifies ($r = -0.52$). These associations

20

provide evidence for a radical flank effect, where the growing attention to radical issues triggers the greater inclusion of eclipsed critical ideas.

INSERT FIGURE 5 ABOUT HERE

Beneath these averages, there are several noteworthy trends. Tables 3 and 4 display trends for individual actors and issues. Table 3 focuses on key nodes in the radical flank. The network centrality of McKibben and 350.org grow until 2013, while divestment shows more persistent growth. Also interesting is the emergence of additional radical issues following divestment, such as stranded assets and carbon bubble. Table 4 examines trends in key liberal issues. There is general growth in the prominence of issues such as carbon pollution, carbon tax, carbon price, and carbon budget. On the other hand, carbon capture seems to peak in 2013, while cap and trade ebbs over time.

INSERT TABLES 3 & 4 ABOUT HERE

To summarize, these analyses provide evidence for how a radical flank effect reshapes the public debate around climate change. They connect the emergence of a radical flank, consisting of both radical actors and their core issue, and the dissemination of this issue beyond the flank to subsequent increases in the centrality of liberal as well as radical issues in the debate. Concurrent with the development of the radical flank, liberal issues moved into the center of the conversation. The enduring growth of radical issues could be considered a separate process from

21

the classical radical flank effect. However, we contend that it also illustrates an interesting extension of this model.

The classic radical flank effect is the emergence of a radical position that makes previously extreme positions more acceptable. But we find a similar process is evident in the transformation of the radical issue of divestment into additional issues such as stranded assets and carbon bubble. While these latter concepts are still radical in implication, they also adopt the language of financial analysis, which makes them more legitimate in the debate within business actor networks. Thus, the battle cry of divestment becomes a call for prudent attention to financial risk, and the carriers of the message shift from grassroots activists to financial institutions and investors. In addition to repositioning established actors and politics, the radical flank can also operate through the translation of radical issues into more moderate variants. This shift could be due to either cooptation by incumbents or to the repositioning of critical voices eclipsed by the expanded radical flank.

Supplemental Causality Test

The foregoing analyses are consistent with our argument that the development of a radical flank led to a repositioning of previously neglected critical issues towards the center of the climate change debate. However, it remains possible that some alternative explanation led to the concurrent elevation of the radical flank and liberal issues, as well as of the secondary radical issues that we attribute to a mainstreaming of the divestment concept. We could not identify any obvious alternative events that occurred during the key turning point from 2012 Q4 to 2013 Q4. This period falls between the two major climate policy meetings in 2009 in Copenhagen and 2015 in Paris as well as between two major U.S. policy initiatives, the failed U.S. Senate cap and

22

trade bill in 2009 and the release of the EPA Clean Power Plan in 2015.[iii] On the activist front, the major battle over the Keystone XL pipeline spans 2008-2016, but peaked in activity in late 2014 to early 2015, as evident in Google search data. Public opinion is an important mediator of social movement outcomes (Amenta et al, 2010), but in the United States partisan polarization around climate change has changed little or intensified from 2011-2015 for most questions (Dunlap et al, 2016). In addition, overall concern about climate change dipped during the recession around 2009-2010, but is remarkably consistent across the surrounding years from 2006-2016.[iv] The lack of clear alternative drivers reflects the dormancy of climate change politics at the time, which may have motivated and empowered Bill McKibben and 350.org to develop the radical flank.

Another possible explanation for our results is that the composition of news producers changed. For example, journalists and newspapers that are more skeptical of climate change could pay less attention to the issue over time. However, we could not find evidence of this dynamic. We limited our sample to newspapers that span the time period in order to control for this type of change, and within the sample there is little trending in composition. Using the index of dissimilarity,[v] the distribution of newspapers shifts on average by 18% from quarter to quarter with very little variation across quarters in this pattern. Individual newspaper shares were also fairly consistent. The top newspaper, *The New York Times*, accounts for between 7-10% of the articles each quarter; the top ten newspapers range from 31-40% of articles with no clear trend; and the average standard deviation across newspapers is 0.14%. There is much more churn in journalists but two facts mitigate concerns about composition change here. First, the percentage of articles without a credited journalist is quite steady at around 36%. Second, the largest share of articles by a journalist in a quarter is 1.4% (belonging to Juliet Eilperin of the *Washington*

23

Post in Q4 of 2011), and the percentages decline exponentially. This distribution reduces the

impact of individual journalists on the results, although there could still be a group movement in

types of journalists that we are unable to detect.

We also examined a matched sample approach as a more rigorous test of causality. To

conduct this test, we split our data into two groups: articles from newspapers that paid attention

to liberal issues but not the radical flank of McKibben, 350.org, or divestment prior to 2014

(control group), and articles from newspapers that paid attention to both (treatment group). We

excluded articles from newspapers that ignored liberal issues in order to make the two samples

more similar. Although the newspapers in the control group had fewer articles about climate

change (6,630 vs. 34,078), this group referenced liberal issues at a 42% higher rate per article

than the treatment group. To compensate for the fewer articles in the control group overall, we

constructed a network based on the entire year of 2013 vs. Q4 of 2013 for the treatment group,

resulting in networks derived from 1,207 and 1,567 articles respectively. Results were also

consistent when both networks were based on one quarter or the entire year.

The results generally confirm our claims about the radical flank. Figures 6 and 7 compare

the networks of NGOs, businesses, and issues from the two samples. In the combined network

(see Figure 5), we observed substantial consolidation of liberal issues near the network's center.

This pattern is especially evident in the treatment network (Figure 7), where key liberal issues,

such as carbon tax and carbon pollution occupy the center of the graph and carbon price is

nearby. In contrast, in the control network (Figure 6), liberal issues are clustered in a somewhat

more peripheral region. Examining the eigenvector centralities of liberal issues, overall these

scores are moderately higher in the treatment group (15% greater). The scores for particular

issues reveal additional differences. In the treatment group, the eigenvector centrality for carbon

24

tax is twice is large, and carbon price and carbon budget are integrated whereas they are missing

in the control network. In the other direction, less radical liberal issues, such as carbon capture

(32% greater) and national security (19% greater), are disproportionately central in the control

group. Overall, by considering prominent alternative explanations and investigating a matched

comparison, this section reinforces the argument that the development of a radical flank

contributed to the growing prominence of liberal issues in the climate change debate.

INSERT FIGURES 6-7 ABOUT HERE

Discussion

One enduring challenge for the environmental movement has been that the makeup of its

constituency is indeterminate. In looking at movements around labor, civil rights or gender

equity, there are clearly identifiable constituents who stand to gain from social change: rank and

file workers, minority, and female constituents. However, with the issue of environmental

protection in general and climate change in particular, there are no natural constituents or

advocates. A high quality environment tends to be a public good, which when achieved cannot

be denied to others, even to those who resist reforms. For many environmental issues, those who

act to protect the environment can expect to receive no private material benefits (Buttel, 1992).

In fact, it is easier to explain opposition to environmental issues due to threatened interests than

it is to explain support. But Bill McKibben and 350.org created a social movement out of a

specific constituency (young people), framing an issue that affects them personally (their future

will be altered), giving them a common enemy (fossil fuel companies), and establishing a

tangible goal (divestment) (Hoffman, 2015).

The group scored a major victory in May 2014 when Stanford University became the first major University to divest its $18.7 billion endowment of stock in coal-mining companies. But on the whole, it has achieved far less success in stigmatizing fossil fuel companies and depressing stock values. Their more important successes must be measured in terms of changing the debate over climate change by staking a position on the radical flank. By demanding the elimination of fossil fuels, the divestment campaign expanded rapidly as a topic in worldwide media (Apfel, 2015), disrupted a polarized debate, and reframed the conflict, redrawing moral lines around acceptable behavior within specific constituencies (Seidman, 2015). Our evidence suggests that this shift enabled previously marginalized liberal policy ideas such as a carbon tax and carbon budget to gain greater traction in the debate, while also supporting the translation of the radical position into new radical issues such as stranded assets and unburnable carbon, which allowed these ideas to disseminate into wider circles.

This finding provides a striking example of how institutional change is possible even in deeply polarized fields with entrenched incumbent positions. Although activism around climate change has made considerable progress through more moderate routes of pursuing reforms at individual organizations and seeding the economy with new business models (Hiatt, Lee, & Grandy, 2015; Vasi, 2011), field-level reforms are needed. A radical flank approach may be able to disrupt field inertia and create room for these changes by redefining the terms of the debate into topics that more organizations could embrace (Beer, 2016).

An additional insight from our findings is that radical and moderate positions are interdependent within institutional debates. This challenges more atomized notions of institutional agency and entrepreneurship where individual organizations act to counter specific and discrete pressures from organizational fields (Oliver, 1991; Greenwood & Hinings, 1996;

26

Lawrence & Suddaby, 2006). This relationship can be a symbiotic dynamic, where radicals strengthen the negotiating position of moderates, who in turn provide a pathway for central issues to move towards radical goals (cf., Truelove & Kellogg, 2016). However, even in this situation, tensions are likely to arise as rivalries for movement leadership emerge. In addition, it is notable that the radical flank we observe gained prominence in part because climate politics were so mired in polarization, and that even as the field-level debate progresses in the news media, underlying public opinion remains deeply polarized (Dunlap et al, 2016). Ultimately, a successful radical flank is likely to produce wider cultural support (Haines, 1988; Rochon, 1998), but its immediate effect may be to reinforce partisan differences, which in turn threatens the ability of moderates to operate. More generally, the greater progressive change in the public debate versus stagnating polarization in public opinion raises intriguing questions about how cultural change can evolve divergently between these two forms.. These differences are especially apparent in the election of a new administration that openly dismisses the idea of climate change and plans to dismantle his predecessor's climate policy initiatives. Going forward, it will be important to see whether progress in the public debate reverts to its state prior to the radical flank or whether changes persist and moderate any attempts to reverse U.S. climate policy.

Can all radicals have such impact? That is not clear from our analysis. For example, we included Naomi Klein within our sample. Her book *This Changes Everything: Capitalism vs. the Climate* called for "shredding the free-market ideology that has dominated the global economy for more than three decades" (Klein, 2014). While it might be argued that she, like Bill McKibben, is staking a position on the radical flank over the problems with capitalism and its role in the environmental ills we face, her effect is far less notable. Capitalism was already a

27

central issue in the climate change debate prior to Klein's book, and we found little evidence of a restructuring of the surrounding conversation in terms of either the associated actors or issues. In addition, the divestment approach has an organizational advantage over Klein's more diffuse critique in that it focuses on concrete sites for mobilization and movement-building (e.g., academic campuses), which can fuel the construction of a radical flank.

There is also a question of the limits of radical flank pressures. Can an agent move too far away from the mainstream such that their message lacks legitimacy to influence the central field-level debates? While Klein's book came out at a time when the financial crisis left many Americans suspicious of the institution of capitalism (a 2013 survey found that only 54% of Americans had a positive view of the term (Buttonwood, 2014)) and Presidential candidate Bernie Sanders gained traction in public opinion over the merits of a shift towards socialism, many within America may not see a dismantling of the capitalist system and the market economy as credible ideas. An overly ambitious movement fringe also carries the risk of provoking a negative radical flank effect, where the broader movement loses credibility. For example, many who dismiss the reality of climate change used Klein's arguments as proof for what they had been arguing all along: that the climate change movement is, at its heart, an anti-development, anti-capitalist, socialist or even communist movement (Oreskes & Conway, 2010).

A key theoretical point also emerges from the McKibben-Klein comparison: the importance of synchronization between challengers and reformist elites for field-level change. The divestment campaign benefitted from the translation of its critique into the conventional language of business. Powerful actors who were critical of existing business practices reframed the divestment challenge as a matter of financial risk from stranded assets and unburnable carbon; all more politically palatable concepts. This move allowed the divestment message to

28

broaden its domain of influence and gain more attention, especially among dominant business actors. Although it may be too early to tell, a similar act of translation would seem unlikely for Klein's anti-capitalism message.

Practical Implications

The radical flank effect and the findings we have presented offer some critical insights for social change actors. The existence of a positive radical flank effect suggests an interdependency between radical and moderate factions that could be strategically exploited (Baron et al, 2016; Downey & Rohlinger, 2008). More broadly, this paper suggests expanding activists' strategic analysis of theories of change to consider indirect pathways and cultural effects. Social movements typically achieve influence by gaining attention from the news media and thereby winning support from critical bystanders who movement targets care about (Lipsky, 1968). A conventional approach might collapse these goals into a plan to directly challenge targets, as when a labor campaign elicits public support to unionize a workplace. But instead, our analysis suggests the value of distinguishing between changing the public discourse and challenging targets. Although the divestment campaign chose an objective that is largely impossible to fulfill, as divestment cannot directly undermine the valuations of fossil fuel companies, this objective also provided a foundation to expand the boundaries of the public debate and improve the position of progressive issues. In addition, campaigners should consider the political landscape in evaluating the tradeoffs between direct and indirect tactics. Our study suggests that the latter may be especially useful in highly polarized and inertial fields like U.S. climate politics. In these conditions, direct challenges are likely to meet unyielding resistance,

while a more indirect route may open up space for incumbents to positively re-evaluate activist positions.

Future Research

Looking ahead, this research opens up future questions on the detection and mechanisms behind the radical flank effect, a concept that has received far too little empirical development to date. To begin, research into radical flanks would benefit from additional methods to identify these mechanisms. This aspect is especially challenging because the mechanism is indirect and it is not clear which actors are most likely to respond to it. Recent work suggests that either moderate incumbents (Truelove & Kellogg, 2016) or more radically opposed incumbents (Baron et al, 2016) may be more disposed to react to a radical flank threat by cooperating with moderate challengers.

Beyond methodological considerations, conceptual and theoretical questions remain for further examination. How does a radical flank gain attention? Conditional on attention, what determines when the radical flank may have a negative or positive effect? For example, Bail's (2012) study of the mainstreaming of the radical anti-Islamic movement in the U.S. suggests that political opponents and the media are attracted to respond to and cover radical ideas, especially when conveyed with strong emotions, and that this interaction ultimately bestows legitimacy and stature in the public debate. Does the radical flank require such translators to amplify their message and positioning?

Our study reinforces the point that commanding the attention of prominent actors, such as powerful businesses and universities, propels cultural changes. The concept of radical flank effects still raises the question of why attention valorizes rather than delegitimizes the flank. We

30

suggest that the translation of radical issues by core actors could be part of the explanation. When incumbents adopt the radical flank's issues, generally after transforming them to some degree, field-level change is accelerated. Without this sympathy and attraction from dissident or adventurous factions within the elite, attention may remain stigmatizing and the radical flank becomes an object of scorn to define one's self against rather than a provocateur to selectively incorporate (we might expect that violent or illegal behavior may lead to this outcome). A better understanding of these mechanisms will also help resolve the issue of the boundaries to the radical flank effect.

Conclusion

In this paper, we investigated how social movements could create institutional change through radical flank effects. This mechanism contrasts with much of the literature on social movements and organizations which focus more on the direct actions and strategies that change agents can undertake, such as protests or other delegitimating activities. But in this paper, we explored the more indirect modes of influence, where activists drive change by shifting the scope and center of field-level debates. Our empirical motivation was to understand the dynamics by which Bill McKibben and the non-profit he helped start, 350.org, were able to introduce the idea of divestment from fossil-fuels into the climate change debate and thereby shift its overall tone and focus. This mechanism operated not by directly harming the value of fossil fuel stocks but rather through cultural changes within the public debate that increased the legitimacy of previously more peripheral ideas for policy action.

By integrating radical flank effects more centrally into our study of field level dynamics, we believe that we are more closely consistent with original conceptions of the organizational

field (Bourdieu, 1993) and the dynamics by which they change. In these earlier views, the field is not so much a constellation of discrete and atomized actors working independently towards self-interested goals. Instead, it is an interconnected and comingled domain in which the identity and freedom of action is intimately tied and dependent on the presence of others that occupy that domain. We should "think of the organizational field, not as some tidy atom or embracing world, but rather as complex striations, long strings rotating as in a polymer goo, or in a mineral before it hardens" (White, 1992: 127). Further, the notions of change that we introduce diverge from more instrumental notions of institutional change where individual actors react to institutional pressures in a dialectic relationship (i.e., Oliver, 1991).

Instead, our depiction of the organizational field is a domain which coheres around relationally constructed issues of debate (Hoffman, 1999), where each position within the field gains its identity and ability to maneuver through its relation to others (Bourdieu, 1993; White, 1981). The emergence of a radical position shifts the scope and center of the field as well as the identities within it, bringing previously peripheral issues into legitimated debates and previously opposed factions closer together. In this process, radical issues undergo a transformation whereby they adopt more mainstream language, terminology and logics, and therefore become more palatable to mainstream actors. In this way, we found that the radical push for divestment and a boycott of investment in fossil fuels became the more moderate financial concern with risk when framed in terms of stranded assets and carbon bubbles. These findings contribute to our understanding of social movements and organizations, and also the urgent politics of climate change.

32

[i] David Brower led the transformation of the Sierra Club from a regional hiking club into a national protest organization, and persistently pushed the environmental movement to take more aggressive positions.

[ii] We also considered using a purely inductive approach to identify key issues in the debate but the results were swamped with meaningless noise.

[iii] The Obama administration instituted a suite of less prominent environmental actions during this time period, including an increase in the MPG fuel efficiency standards for automobiles in August 2012, changes to mercury limits for power plants in March 2013, and a lengthy process to develop carbon rules for new power plants from July 2011 to October 2015 (McCarthy & Copeland, 2016).

[iv] For example, in 2008, 76% of Democrats to 42% of Republicans in Gallup data agreed that "the effects of global warming have already begun" and these numbers were 75% and 41% in 2016 (Dunlap et al, 2016); a Pew report shows that 77% of Americans say "there is solid evidence that the earth has been getting warmer" in 2006 and 67% agree with this in 2013, after dipping to 57% in 2009 (Pew Research Center, 2014); and Yale survey data finds that 62% of Americans were somewhat or very worried about global warming in November 2008 while 61% shared this position in November 2016 (Leiserowitz et al, 2017).

[v] The index of dissimilarity is the sum of the absolute differences between the percentages for each entity across two time periods, divided by two. It ranges from zero when there is no change to one hundred when there is complete turnover. In effect, the index summarizes the reallocations that would be necessary to equalize the distributions between time periods.

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35

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Figures

Figure 1 – Evolution of the Radical Flank Actors, Issue, and their Overlap
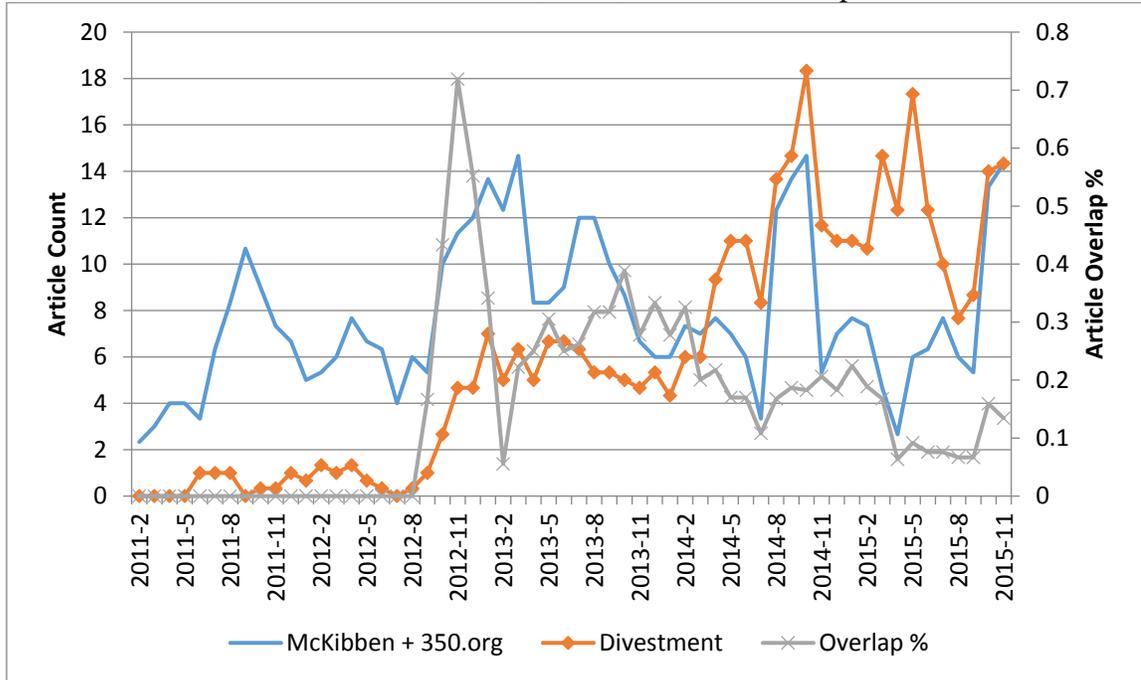
Note: data are smoothed with a three-month window.

Figure 2 – Climate Change Discussion Network among NGOs, Businesses, and Issues, 2011 Q1
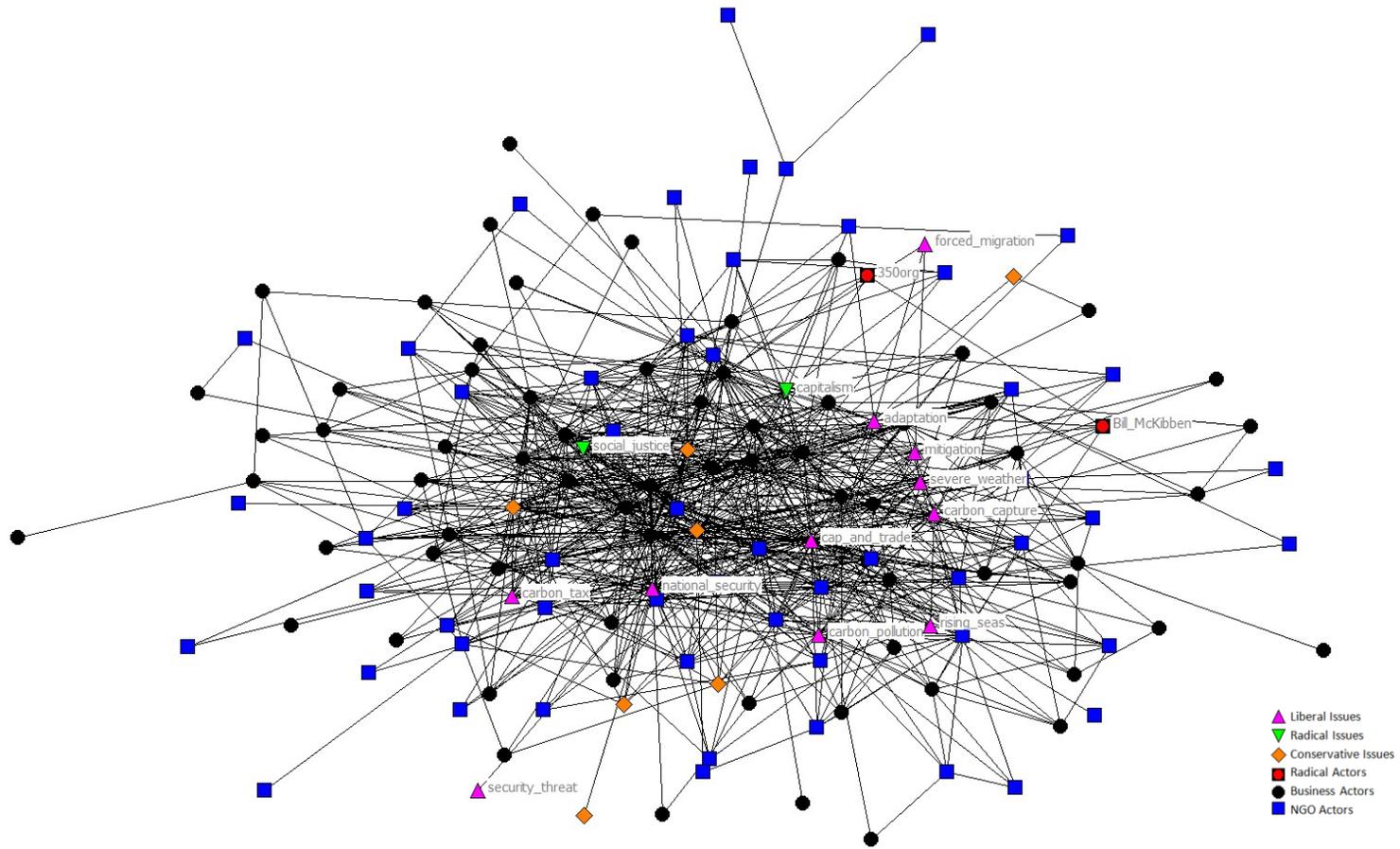
Figure 3 – Climate Change Discussion Network among NGOs, Businesses, and Issues, 2012 Q4
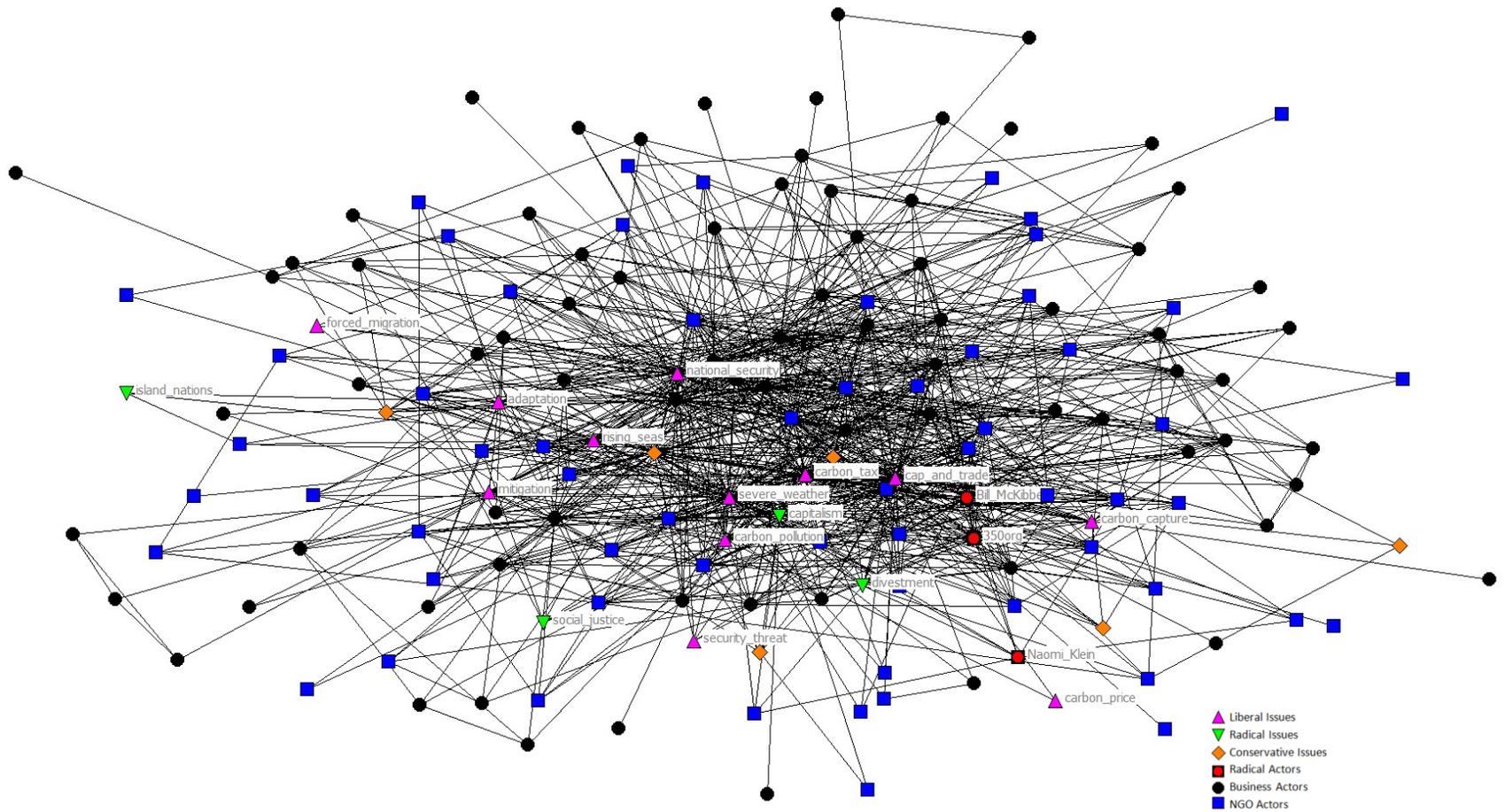

46

Figure 4 – Climate Change Discussion Network among NGOs, Businesses, and Issues, 2013 Q4

Legend:
- Liberal Issues
- Radical Issues
- Conservative Issues
- Radical Actors
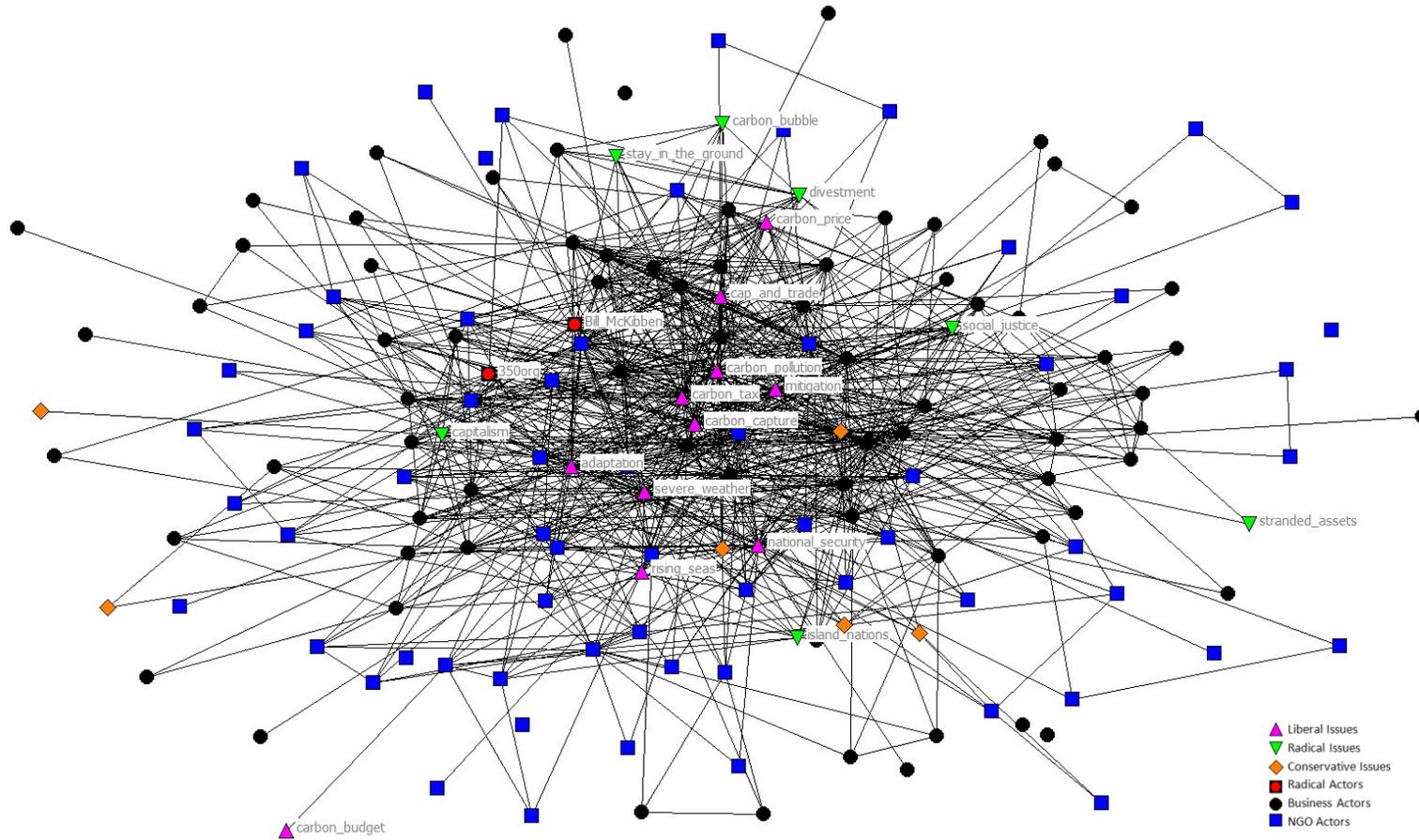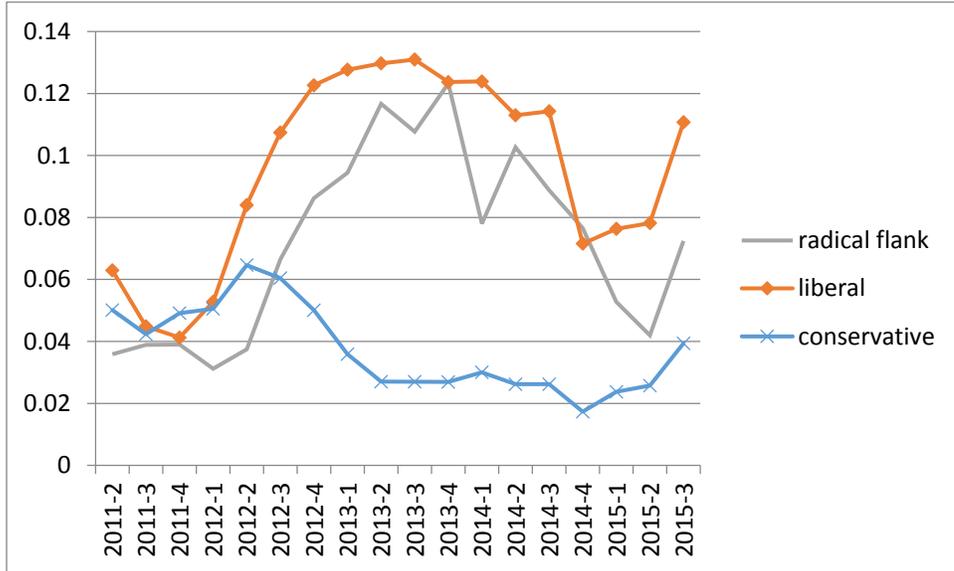- Business Actors
- NGO Actors

Figure 5 – Trends in Average Eigenvector Centrality of the Radical Flank, Liberal Issues, and Conservative Issues

Note: data are smoothed with a three-month window.

Figure 6 – Subsample of Climate Change Discussion Network from Publications without Attention to Radical Flank in 2013
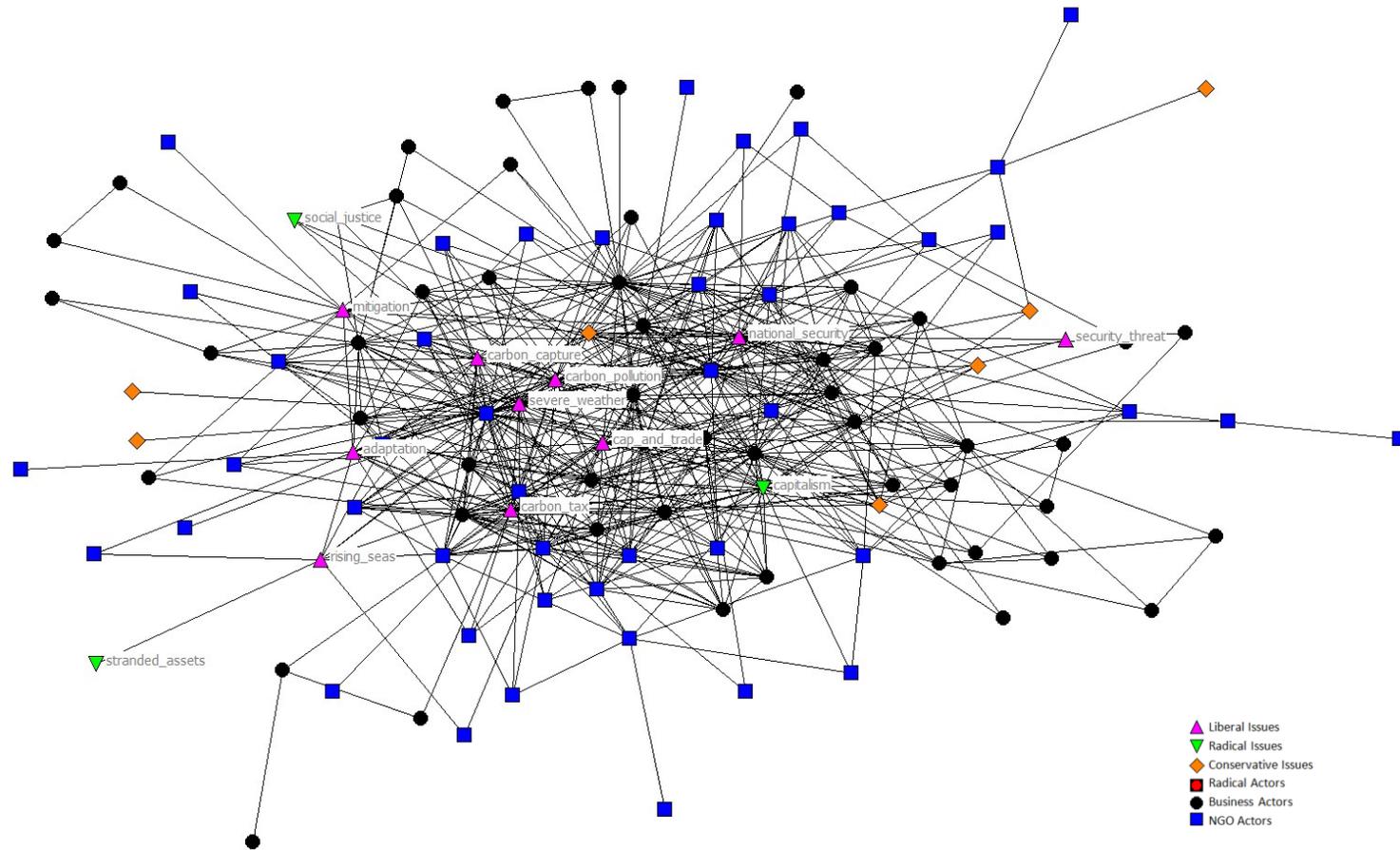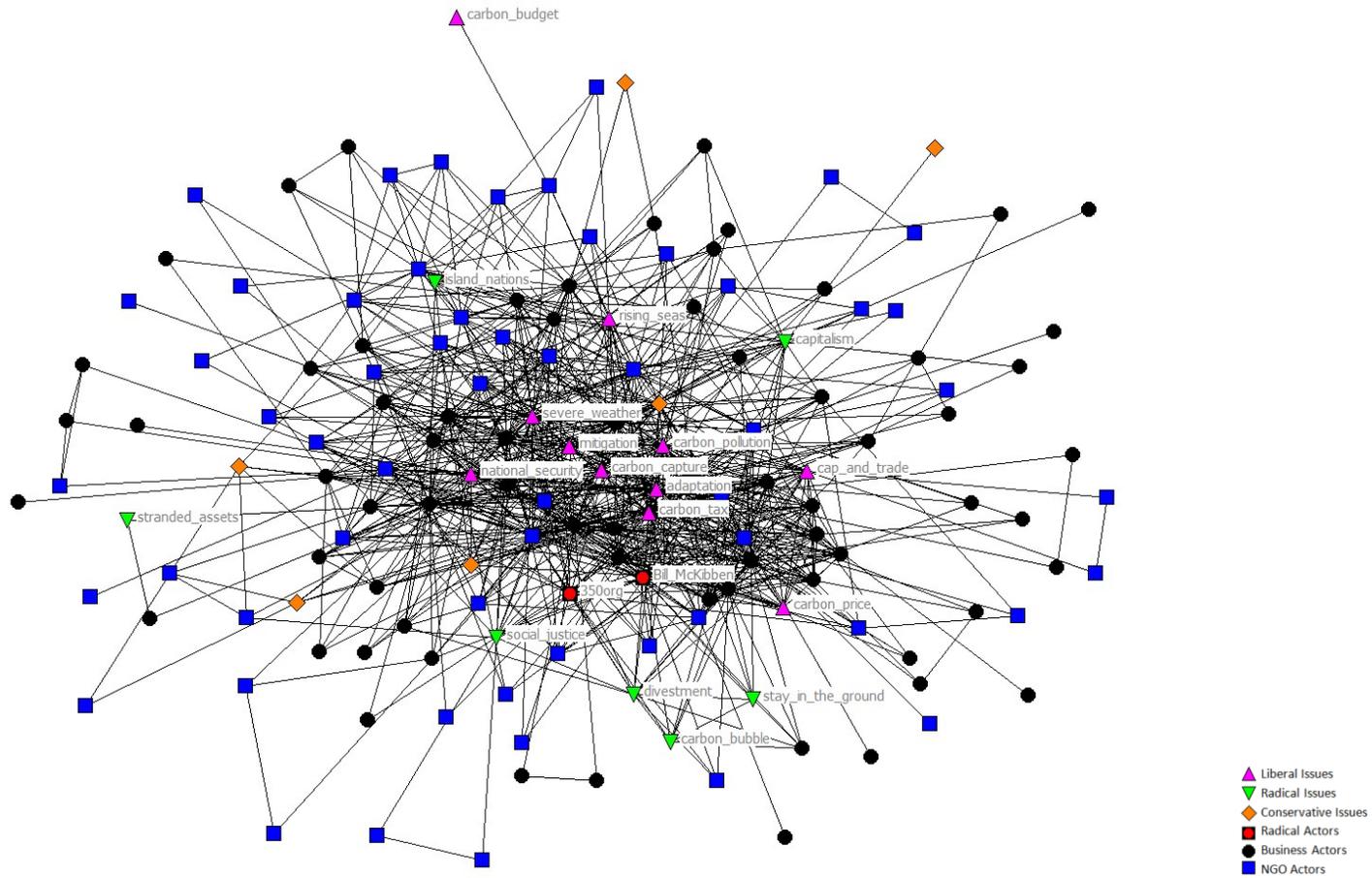
Figure 7 – Subsample of Climate Change Discussion Network from Publications with Attention to Radical Flank in 2013 Q4

50

Tables

Table 1 - List of Key Issues across the Ideological Spectrum

Ideology	Issue
conservative	geoengineer
conservative	hoax/fraud
conservative	big government
conservative	communism
conservative	economic recession/economic depression
conservative	government overreach
conservative	nanny state
conservative	socialism
liberal	adaptation
liberal	carbon budget
liberal	cap and trade/carbon permits/carbon trading
liberal	carbon capture
liberal	carbon price
liberal	carbon tax/carbon fee
liberal	mitigation
liberal	carbon pollution
liberal	forced migration
liberal	global instability
liberal	national security
liberal	rising seas/rising oceans
liberal	security threat
liberal	severe weather/extreme weather
radical	capitalism
radical	carbon bubble
radical	divestment/divest
radical	rogue industry
radical	stay in the ground/keep in the ground/remain in the ground
radical	stranded assets
radical	unburnable carbon
radical	generational justice
radical	island nations
radical	social justice/social equity/social injustice/social inequity

Table 2 – Actors Most Associated with Divestment outside of the Radical Flank

rank	actor	type	Jaccard association
1	Stanford University	academic	0.046
2	Harvard University	academic	0.031
3	Exxon Mobil	business	0.020
4	Chevron	business	0.015
5	MIT	academic	0.014
6	Peabody Energy	business	0.014
7	Yale University	academic	0.013
8	NextGen Climate Action	NGO	0.012
9	Standard Oil	business	0.012
10	University of California	academic	0.012

Table 3 – Trends in Eigenvector Centrality of Radical Actors and Issues

year	350.org	Bill McKibben	divestment	carbon bubble	stay in the ground	stranded assets	unburnable carbon
2011	0.033	0.044	0.016	0.000	0.002	0.000	0.000
2012	0.064	0.078	0.023	0.000	0.000	0.000	0.000
2013	0.134	0.123	0.073	0.006	0.006	0.001	0.000
2014	0.086	0.097	0.096	0.003	0.008	0.012	0.003
2015	0.049	0.045	0.070	0.000	0.013	0.013	0.000

Table 4 – Trends in Eigenvector Centrality of Liberal Issues

year	cap and trade	carbon budget	carbon capture	carbon pollution	carbon price	carbon tax
2011	0.237	0.000	0.033	0.044	0.001	0.101
2012	0.303	0.000	0.047	0.131	0.010	0.178
2013	0.203	0.002	0.118	0.358	0.032	0.271
2014	0.211	0.008	0.041	0.349	0.014	0.215
2015	0.170	0.005	0.040	0.218	0.010	0.169