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Examining Processes of Normative Isomorphism and Influence in Scaled Change Among Higher Education Intermediary Organizations

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This study examines the Association of American Universities Undergraduate STEM (science, technology, engineering, and mathematics) initiative and the ability of a national organization and its member institutions to reshape norms about the importance and value of teaching and dedicated efforts to teaching improvement. The study is framed with literature from institutional theory, meso-influence theories from organizational theory, and research on higher education intermediary organizations. Our findings suggest that Association of American Universities' influence was a powerful motivator for institutions to alter deeply ingrained perceptions and behaviors. We organize our findings into three categories of "enactments" based on the vehicles through which an influence behavior is motivated: prioritization, social pressure, and recognition. This study was able to provide concrete descriptions for what influence can look like within national organizations that are organizational field actors.

Keywords: *case studies, educational reform, higher education, organization theory/change*

> When Harvard changed medical education—then all the others followed
>
> —Interviewee

Various studies using institutional theory have documented the way that colleges and universities have changed as a result of isomorphic forces—colleges becoming universities or teaching institutions adopting research-university behaviors (Boyce, 2003; Morphew & Huisman, 2002; Simsek & Louis, 1994; Zemsky, 2013). Many of these studies built on earlier sociological observations that elite research universities have often set the trends that ultimately changed behaviors and values on other campuses (Jencks & Riesman, 1969). In reviewing the history and sociological trends of higher education, Jencks and Riesman (1969) famously quipped that in the past 100 years, the top 60 institutions in the country have consistently shaped the norms and behaviors of all other colleges and universities. For example, institutions that had strong commitments to teaching over time have become more focused on research (Morphew & Huisman, 2002). New fields of study, curricular alterations, and faculty work structures have often followed the lead of elite universities (Boyce, 2003). Isomorphic changes are often described as ill-serving the enterprise as institutions shift their missions from their original purposes. As institutions become more homogeneous in their mission, values, and work, diversity in higher education declines (Morphew & Huisman, 2002; Zemsky, 2013). But could isomorphism be used for good?

This study builds on and tests the historical and sociological insight of Jencks and Riesman (1969) and evidence from literature on institutional theory, exploring whether university members of the Association of American Universities (AAU) providing greater attention to teaching and using evidence-based teaching practices might result in scaling these practices more broadly across higher education. The study examines the AAU Undergraduate STEM initiative (see Appendix A for a description of the initiative) and the ability of a national organization and its member institutions to reshape norms about the importance and value of teaching and dedicated efforts to teaching improvement. AAU (and its member institutions)[1] is uniquely positioned as a prestigious actor in the wider higher education community to alter faculty priorities and practices and to work with other external agencies and disciplinary societies to align norms potentially reshaping the entire field in which higher education operates (Morphew & Huisman, 2002). The AAU membership organization has historically been one of most prestigious entities in higher education.

This influence and norm setting began back in 1900, when 14 of the nation's leading PhD-granting institutions founded the AAU with the goals to establish standards and

create greater uniformity for doctoral education, and advance the standard of weaker institutions. Almost as soon as AAU was founded, German universities began using AAU membership as a measure of quality for graduate school admissions, setting it as an international stamp of quality. The founders did not want the association to grow too rapidly, so rather than expand its membership, AAU in 1914 developed a list of U.S. institutions whose graduates were deemed capable of succeeding at European universities and were quality institutions. Through these two major set of activities, they established themselves as standard bearers for defining quality and cemented their prestige. AAU today remains an invitation-only association; its membership criteria are widely viewed as the measure of quality in research universities. In this context, a commitment by the top research universities to improve undergraduate STEM education provides a highly influential example for other institutions to follow.

The AAU STEM initiative presents a unique opportunity to understand the extent to which AAU and its elite institutions can influence the direction of other universities if they intentionally set out to alter and improve teaching practices.[2] While isomorphism is a well-documented phenomenon, there have been no studies of organizations such as AAU attempting to harness isomorphic forces intentionally to create institutional change. AAU leaders communicated this as their strategic objective in the launching and execution of this initiative. As we will describe in the theoretical framework, this provides a distinctive opportunity to explore institutional theory in a way not often applied in higher education, which documents how organizations can purposefully change the normative social structures within their fields (Suddaby, 2010). The overall research question addressed was

Research Question 1: In what ways has the AAU used its prestige and legitimacy to strategically influence AAU universities to increase the value of and attention to improving undergraduate teaching in STEM?[3]

Literature Review and Theoretical Framework

The study is grounded in literature on institutional theory (henceforth IT)—a macro theory of large-scale change—including both traditional and more recent concepts from neo-IT and strategic action fields (SAF). In the literature review that follows, we outline key concepts from IT/neo-IT/SAF and their relationship to influence,[4] including societal and organizational fields, legitimacy/prestige, isomorphism, and SAF.[5] See Appendix B for a set of literature also used to help understand influence processes but shortened due to space limitations as it was not the main framing.

Institutional and Neo-Institutional Theory

Broadly, IT describes how institutions emerge, grow, and change through a complex interplay of social forces. IT examines institutionalization: the social process through which routines, innovations, or practices are legitimated, and become taken for granted and meaningful (Baum & Rowley, 2002), allowing individuals to come to accept a shared definition of social reality (Scott, 1987). While early IT focused on the passive isomorphic forces to which organizations react (early neo-institutionalism; DiMaggio & Powell, 1983), modern IT research (often called new or neo-institutionalism) emphasizes the role of agency and action in institutional change (DiMaggio, 1988; Suddaby, 2010). These agentic theories explore various types of change processes, including embedded agency (institutional entrepreneurship), macro-level processes (institutional logics), and field dynamics (strategic action fields). This article highlights agency by exploring the strategies of AAU as a powerful institutional actor (incumbent), but it also foregrounds early IT to communicate the ways in which larger forces can facilitate change—particularly prestigious, legitimating groups such as the AAU that historically have defined the norms and rules by which the field operates.

Societal and Organizational Fields. IT explores the impact of the broader societal field, such as the nation-state, political regulations, market factors, and the organizational field that includes key groups such as accreditors, national higher education associations, and disciplinary societies; the societal field encompasses broader pressures than the organizational field (Powell & DiMaggio, 1991). The organizational field is defined as "a community of organizations that partakes of a common meaning system and whose participants interact more frequently and fatefully with one another than with actors outside the field" (Scott, 2001, p. 84). Organizational fields affect the organizations within them, but in varying degrees and depending on the power of the fields. The organizational field of higher education comprises accreditation and disciplinary societies, the State Higher Education Chief Executive Officer, and the like, who often serve as mediators and translators for larger forces (Brint & Karabel, 1989). Nation-state and market actors funnel their concerns to organizational field players (Scott, 2001). For example, over the past two decades, congressional, business, and industry concerns about colleges graduating enough students in STEM have been communicated to AAU.

Greenwood, Suddaby, and Hinings (2002) noted that the societal field tends to be explored more in research and noted how organizational field actors such as professional associations have often been overlooked. Their study examined a major change in the Canadian accounting profession. These authors describe the importance of professional associations for highly institutionalized organizational fields like

higher education. These associations establish the professional norms that are critical for creating legitimacy. Often professional associations are seen as conservative forces maintaining the status quo, but at key times, they also push for change and innovation and can be a particularly important and influential actor within a field (Faulconbridge & Muzio, 2016).

A few studies of organizational field actors have demonstrated their impact on altering the landscape of higher education. For example, disciplinary societies helped emphasize the faculty role in research, which is perceived as more prestigious than teaching, and it was adopted as a general norm that still dominates much university activity (Boyce, 2003; Larson, 1977). The impact of fields and disciplines has also been explored in terms of impact on curriculum and mission of units within universities (Khurana, 2010; Starr, 2008).[6] Accreditors have pushed for assessment of student learning, and intermediary organizations (IOs) have applied normative pressures to implement performance based funding (Boyce, 2003; Brint & Karabel, 1989; Gandara, Rippner, & Ness, 2017; Orphan, Laderman, & Gildersleeve, 2018). National presidential associations have shaped federal policies and lobbied the government (Cook, 1998; Murray, 1976). But national higher education associations remain an area with a dearth of research. In framing the study, we explored the AAU as an elite and prestigious organizational field actor that would be likely to have influence and able to deploy influence readily, thus we now turn to IT's focus on legitimacy and prestige.

Legitimacy/Prestige. Legitimacy and prestige are key constructs from IT that are used to frame the study. Referring broadly to the state of an idea or practice after it becomes embedded in accepted assumptions (Suddaby & Greenwood, 2005), legitimacy implies that an institution gradually becomes taken for granted as a norm and, in turn, shapes the beliefs and actions of actors within that institution. As they move toward legitimacy, institutions gain power and dominance in a field. Scholars such as Morphew and Huisman (2002) and Gonzales (2013) have demonstrated that institutional actors strive to belong (personally and institutionally) and be allowed to play in the same game as "legitimate" campuses. Legitimacy can also be conceived as the conformity of an organization with social laws, norms, and values (Deephouse & Suchman, 2008; Gonzales, 2013; Weber, 1978). For example, AAU's legitimacy is tied to its founding of the social norms around quality and excellence governing higher education institutions. As a membership organization for the 62 most elite universities in the country, AAU's standards for university activity conform to the long-established norms of those elite institutions. For that reason, AAU is deemed legitimate not only by its member universities but by all U.S. universities who recognize the excellence of those 62 institutions. AAU is thus, in a sense, marked by the excellence of its member institutions. Beyond mere legitimacy, *prestige* is reciprocally bestowed by and on AAU by its elite member universities. While there are various sources of legitimacy (e.g., professional derived from disciplinary societies, normative through accreditation), AAU's legitimacy is unique in that it stems from its historic role in defining excellence—in prestige itself, thus legitimacy and prestige are interconnected (Deephouse & Suchman, 2008).

Prestige is "an organization's capacity to achieve objectives by virtue of enjoying a favorable social evaluation" (Deephouse & Suchman, 2008, p. 66). Legitimacy differs from prestige in that it is a prerequisite for it. While legitimacy is synonymous with conformity, prestige implies excellence, for which universities have grown to compete with one another (Jencks & Riesman, 1969). AAU's position is unique within higher education because it defines the rules of competition within which non-AAU institutions play. AAU holds the imprimatur of its member universities and, through a membership invitation, the power to designate an institution as prestigious. AAU is therefore the arbiter of excellence in U.S. higher education. This prestige is enhanced by its restrictive policies and only admits institutions that meet its criteria and discontinues membership if they begin to fail to meet these criteria, which happened to two universities in recent years. Research also points to sources of prestige and AAU operates as an incumbent that wields disproportionate influence and whose views tend to be reflected across higher education (Fligstein & McAdam, 2011).

The legitimacy of a practice can be established through the prestige of an organization (Greenwood et al., 2002) as it is within our research. For example, where many organizations in a field look to a prestigious professional association for guidance, they are likely to adopt the practices embraced by that association. Over time, the practices are legitimated within the field and they become the new norm. Building from notions of legitimacy and prestige that are the driving values for change, we move to the mechanisms that are used for influence.

Normative, Mimetic, and Coercive Isomorphism. The type of change and influence process typically addressed through IT is isomorphism—the tendency toward similarity of organizations within a field. Powell and DiMaggio (1991) identified three types of isomorphism: (1) *coercive isomorphism* that stems from legal or regulatory pressure, (2) *mimetic isomorphism* resulting from standard responses to uncertainty, and (3) *normative isomorphism* associated with pressures from professionalization (Powell & DiMaggio, 1991). These three mechanisms can overlap and intermingle, but they tend to derive from different conditions. At an analytic level, only coercive isomorphism is linked to the environment outside of the organizational field. Mimetic and normative processes are internal to the field and help explain the spread of roles

and structures. While these mechanisms generally act to spread processes, they can also be used to alter and make changes in institutions as emphasized in IT. Many researchers in higher education have used IT to understand why colleges and universities with very distinctive missions have shifted over time to become more similar in character (reflecting mimetic isomorphism) in terms of their student bodies, mission statements, focus on research over teaching, curriculum, and other components that make up the organization (Morphew & Huisman, 2002; Simsek & Louis, 1994). As is demonstrated in AAU's founding mission in 1900, its goal has been to set standards of excellence and to influence other institutions.[7]

More recent or neo-IT focuses on not just the spread of existing practices but how institutions change and the role that various large forces or groups might play in that process. Suddaby and Greenwood's (2005) seminal study on the creation of a new organizational form—multidisciplinary partnerships—provides an empirical illustration of normative isomorphism by showing how logics within a profession are advanced and contested through language and discourse. Their study demonstrates a battle of logics and the political and ideological struggles that drive it.

Strategic Action Fields. A more recent development that expands IT's understanding of change and tactical approaches (similar to institutional entrepreneurship and logics) is strategic action fields, which combines insights from social movement theory into IT to account for emergence, change, and dynamics within fields. Similar to our critique of earlier IT, Fligstein and McAdam (2011) point to the lack of precision in IT to account for specific mechanisms of change and agency. They bring in concepts such as incumbents, challengers, and governance units to articulate agents of change; social skills as the interpersonal activities needed to propel changes by agents; and events in the broader context such as shocks, field ruptures, or episodes of contention that agents can use to frame and need for and facilitate changes.

Using strategic action fields, AAU is an incumbent that is deploying certain social skills (e.g., framing) and drawing on the environment vis-à-vis other organization it networks with to create change. As an incumbent, AAU can deploy disproportionate power to develop an alternative view of the field of action. They can harness prestige networks, draw on external threats, and identify frames that resonate with their membership. Fligstein and McAdam (2011) theory is noted as strong fit for disruptive actors but may also be useful for traditional actors such as AAU since they include incumbents (and a unique one that has significant prestige and has historically played an isomorphic role). The influence dynamics Fligstein and McAdam articulate from social movement theory may not be as applicable to understanding AAU as a field-level actor attempting to harness prestige to make change as the theory was not developed with this specific type of activity in mind and critiques have noted that SAF is more prone to elucidate nontraditional and bottom-up players (Goldstone & Useem, 2012).

Method

The study aims to explore how AAU used its prestige/legitimacy strategically to influence universities (AAU and non-AAU institutions) to increase the value of and attention to improving undergraduate teaching in STEM. Previous studies of scale in policy, international development, and education have used predominantly qualitative methods (often case study) to examine *how* scale is achieved in order to understand underlying mechanisms like influence (Coburn, 2003; Elmore, 1996; Samoff, Sebatane, & Dembélé, 2003). This overall study explored a broader research question and theoretical directions and they are described in Appendix C. This study also utilized a case study approach and relied on multiple qualitative data sources—documents, interviews, and observations to examine perceptions around influence. Studies about scale are often conducted while the process of scaling is occurring because understanding the mechanisms that worked to achieve scale are difficult to ascertain postprocess (McLaughlin & Mitra, 2001). As a result, we conducted the study over 3 years during Years 3 to 5 of the 5-year initiative, giving it time to get off the ground (Dede, 2006).[8]

Data Collection

Documents. The first year of the project involved extensive document analysis (while simultaneously conducting observations) to understand the initiative. Various forms of documents were developed during the initiative's first few years, including annual reports, correspondence about the initiative, the project framework, site visit notes, survey data about teaching practices, webinars captured through video hosted by AAU, and multiple meeting notes including network, project site, advisory board, and AAU team, which were all reviewed. In total, more than 10,000 pages of documents were reviewed to understand the initiative prior to researchers beginning work and then those produced during the 3 years of study.

Observations. The study involved 2.5 years of observation and allowed for exploration of mechanisms of influence among the project sites as well as the AAU STEM network and outside partners. The observations provide empirical data to support perceptions in the interviews and triangulate perceptual data as well as provide context information that helps interpret interview and document data. Extensive fieldnotes were taken at the following events: bimonthly planning meetings by the AAU initiative staff over 2.5 years—28 meetings in total were observed (list of meetings excluded for space).

Interviews and Sample. To understand influence processes, we interviewed four groups that could provide insight: (1) all AAU initiative key leaders and personnel, (2) faculty and administrators on the eight project sites that were a target of the project (between 6 and 10 per campus), (3) faculty and administrators on nonproject sites (called points of contact) but that are part of the AAU STEM network, and (4) collaborators from outside organizations (groups like National Science Foundation or National Academies of Science) and other non-AAU campuses that have worked with AAU on the initiative. In total, the study included 104 interviews (48 from project teams, 26 AAU STEM network members, 13 key leaders and personnel of the initiative, and 17 collaborators). See Appendix D for rationale for sample interviewed and details of interviews.

Data Analysis

The qualitative data (documents, interviews, and observation) was analyzed using Hyper-Research—a qualitative software program that helps manage and analyze large amounts of qualitative data and eases the coding process. Boyatzis's (1998) deductive and inductive thematic coding strategy was used as a way to systematically develop codes. We used literature as a sensitizing vehicle to inform the reading of interviews rather than to dictate codes and to be open to emergent codes. For the deductive codes, we overlaid ideas from IT and reviewed earlier in the literature review. This article draws on a set of codes we developed—some were *deductive*—related to the IT such as prestige, legitimacy, changing norms, as well as *inductive codes* such as prioritization, recognition, branding, and partnering with other influential organizations that emerged in the data. The initial and final code lists can be found in Appendix E. Codes were identified as salient if most interviewees brought up the code *and* emphasized its importance so that we had quantitative and qualitative justifications for including it, following Boyatzis methodology. Boyatzis does not identify a set number that a code be identified but, instead, suggests weighing ideas that are brought up much more often than others. We then examined for interrelationships in the codes to develop three larger themes: the three enactments of influence. For example, the "social pressure" theme—one of the three enactments—emerged from a conceptual linking of several of these codes: specifically, competition, branding, and striving.

Trustworthiness

This study design draws on the most valid and systemic approaches to studying the scaling of change, emphasizing interviews and observations that help explain key underlying mechanisms such as influence (Dede, 2006). First, observations and document analysis were carried out for over a year prior to the interviews to ensure that the researchers were familiar with the initiative and well aware of the context to maximize the validity of interviews. Second, observation, documents, and interview data were compared to provide multiple data points in support of any finding and to triangulate those findings. Third, multiple researchers coded data, ensuring that the themes were identified by multiple individuals. Fourth, we convened and received feedback from an advisory board on our design, observation and interview protocols, sample, and interpretations of the data. The study is part of a National Science Foundation–funded study and the advisory board was made up of scholars on change in higher education and those who have specific expertise in STEM reform. Fifth, we memberchecked the findings among a sampling of interviewees that represented all the key groups we interviewed. See Appendix F for limitations and positionality of the researcher.

Findings: Enactments of Influence

At the core of AAU leaders' success in scaling teaching practices through the STEM initiative is its influence within the sphere of higher education. Our findings suggest that interviewees believe that AAU's influence was a powerful motivator for institutions to alter deeply ingrained perceptions and behaviors. We organize our findings into three categories of "enactments" based on the vehicles through which a behavior is motivated. These categories are prioritization, social pressure, and recognition. "Prioritization" consists of motivation that arises as a result of AAU's acknowledgment of the project's or university's importance, such as visits to institutions by AAU representatives and partnerships with other renowned research organizations; the "social pressure" category includes enactments motivated by peer comparison and competition; and "recognition" reflects motivation through acknowledgment or receipt of credit for good work. The boundaries of the three categories are not precise, and some enactments may fit within multiple categories. However, we find analytic value in the categorizing as it helps us understand the different types of motivations at the core of scaling behaviors through influence.

Last, undergirding all the enactments and specific tactics was the pursuit of prestige associated with AAU affiliation; both the prestige of AAU and the pursuit of prestige by universities through their affiliation with AAU (or hoped affiliation). The foundation of the three categories—prioritization, social pressure, and recognition—was the raising of the status of teaching by associating it with a prestigious organization. In analyzing our data, prestige was the most common theme by far: participants described AAU[9] using words like "beacon," "influential," and the "gold standard"; they talked of the importance of name recognition and media attention for their reputations, as well as conversations with university leaders who constantly seek out the next big thing to catapult

their institutions up the rankings. Following, we describe each of the three enactments—prioritization, social pressure, and recognition. Because the theme of prestige is so entrenched in the data, rather than explaining the theme in a separate section, we weave in references to prestige within each enactment. While this article does not focus on whether and what changes institutions made (the focus of other articles from the study—Kezar & Bernstein-Sierra, in press; but it is important to note institutions did institutionalize changes in teaching in STEM), the findings are responses to our questions about what influenced them to make the changes we documented. Readers should be reminded that the study examined perceptions of influence and prestige and we cannot speak to causality. Furthermore, we cannot generalize from our findings but can only speak to the perceptions of influence among those we interviewed and observed.

Prioritization

Prioritization enactments are motivated by the visible commitment of AAU leaders to STEM teaching reform and to the initiative itself. These enactments tend to involve actions on the part of AAU that foster confidence in the initiative's value. These include development of the initiative, site visits, and partnerships with other influential organizations. The development of the initiative was interpreted by interviewees as visible and public acknowledgment that STEM teaching is viewed as a worthwhile cause in higher education. Site and campus visits were valuable because of interviewees' in-person contact with AAU leadership and staff that promoted the importance of the initiative. Finally, partnerships with other influential organizations such as funding and research organizations were effective because the presence of representatives of those organizations at initiative meetings and events boosted confidence that the initiative was not a one-off project, but one for which AAU is willing to invest resources in building relationships and seeing how these other important organizations were also valuing teaching.

Development of the Initiative. It could go without saying, but it is important for our purposes to note that AAU's leadership decision alone to develop the STEM initiative was the strongest motivation for campuses to participate in it. This is not because similar projects relating to STEM teaching improvement did not exist elsewhere sponsored by different organizations, but because no similar project had ever been undertaken by AAU. The quote that opens this article alludes to that fact that elite campuses shape the broader system of higher education. Many interviewees noted that, as an organization representing campuses like Harvard, AAU possesses the prestige of Harvard itself and has sway over the rest of higher education (and the overall enterprise) to promote particular values or ways of doing work.

According to interviewees, the most important role that AAU can play as an organization is to prioritize an initiative like this that values and elevates teaching within AAU institutions.

AAU was noted as a prestige organization and serves as the "gold standard and standard bearer for the entire [higher education] system." Almost all interviewees noted the mere existence of the initiative as important in itself to change: "The simple existence of this initiative and the fact that AAU is really an organization of the top leadership, of the presidents and the provosts. They (other campuses) seem to be getting the message." At nearly every meeting we attended or conversation we took part of, we heard similar sentiments about AAU being able to capture the attention of institutional leaders who in turn shape campus behaviors. At a department chair workshop, the first comment made by a faculty member to the AAU was, "You have my institution's attention—they want to be an AAU institution and care about that. So that is what can convince our campuses. You are influential."

Site or Campus Visits. Site visits by AAU staff to demonstration sites or visits to AAU campuses that were not a project site but part of the AAU network were both seen as a key mechanism of influence to facilitate change. The AAU staff visited campuses several times during the initiative and were scheduled to meet with senior administrators on the campuses where they could influence those individuals. AAU staff inquired about the support that senior administrators were providing for the initiative, knowledge about the initiative, and future plans. In addition, AAU staff also reported on activities from other campuses they thought might be influential in shaping changes they thought were needed on that campus. For example, at one campus where math reform was stalling, they provided the Provost and department chair contacts at other AAU campuses where math reform had successfully been undertaken. As a result of the site visits, members of the AAU project site teams noted the greater exposure for the work they were doing and support that often followed from senior administrators as a result of the site visits. A faculty member comments, "Those site visits. They really get the attention of our Provost and Deans. You can see changes taking off after the AAU team has come to campus." In addition, faculty and departments that may be initially resistant to the initiative might be convinced by meeting with the AAU leadership, hearing about how the administration is influenced by the AAU, seeing the prominence of the individuals committed, and hearing about the other AAU campuses involved. As one faculty member describes:

> Our math department was pretty hesitant. However, once we had the site visit with AAU staff, there was this instant buzz about how this important group was championing teaching improvement.

> And my next conversation with the math department chair went quite differently.

Therefore, the site visits became influential for change because of AAU's ability to sway key powerful individuals on the campus vis-à-vis their prestige and reputation and being able to get the attention of resistant individuals and departments. Nonproject sites asked AAU staff to come and speak about the initiative, and faculty and staff on those campuses also reported how it created motivation for change by drawing attention of senior leaders. A faculty member reflects this influence:

> We invited the AAU staff to present and made sure all our senior leaders were invited. Usually they would not come to an event like this, but they were all there and I know it is because AAU was the host and speakers. Within days, I was invited to talk about our biology and chemistry reform efforts and we talked about ways to support the effort and sustain it. We have had many NSF grants and they never receive the attention that this project has.

Partnering With Other Influential Organizations. Based on its historic prestige, AAU has the ability to convene and physically bring together important groups that few organizations are able to match. The names of prestigious organizations and groups were always associated with AAU and considered a benefit of participating in the initiative. AAU leveraged its prestige to bring in other groups that also are perceived as prestigious in the higher education field such as the National Science Foundation and National Academies of Science. However, to see those organizations also represented at meetings fostered confidence in the AAU that the initiative was not a one-time, or short-term project. It was evidence that AAU was committed to the initiative and had invested in building relationships. Interviewees noted that as a national organization, AAU was able to leverage change through partnering with other groups that are influential to affecting teaching in STEM or STEM fields. Various people interviewed talked about how important it was that partner groups such as funders, National Research Council, higher education associations, and other STEM teaching efforts were in attendance at AAU STEM initiative meetings. One collaborator describes this impact:

> I have talked a lot with leaders at the AAU campus sites and I can tell you that having HHMI [Howard Hughes Medical Institute] or Helmseley here at the meetings, that makes people pay attention more and I think they have more confidence that in five years there are still going to be people talking about improving teaching in STEM.

The external partners and groups that AAU brought in was influential to changing campus priorities. The more that these other elite groups joined AAU in valuing teaching, the more amplified the influence.

Social Pressure

Social pressure enactments are motivated by competition and branding. As in other industries, competition between universities is common within higher education. Institutions compete for top faculty and students, innovations, and research dollars, and they use peer comparisons as a measure of their performance. Participation of peer or rival universities in an AAU initiative puts pressure on institutions to follow suit. But social pressure was not just enacted among project sites or AAU institutions. Interviewees described how AAU was also able to indirectly exert power over non-AAU institutions that are striving to increase their prestige.

Competition. Interviewees noted how competition is ingrained in the culture and norms of AAU institutions. Practically every individual we spoke with (across both the eight project sites and broader AAU network) noted that this competition could be leveraged for change. AAU staff noted that competition was a way they believed they could influence campuses and get them to focus on and improve teaching. As one administrator noted:

> There's just this built-in competition between AAU institutions. They'll want to be in the top tier and are competing constantly to improve. So that competition was built into this initiative. We competed to be project sites. As project sites we compete to contribute to the initiative, and we want to be perceived as leaders in this work.

As we spoke to points of contact (liaisons chosen to connect with the AAU about the initiative) in the AAU network, they specifically noted how their universities were competing to set themselves up for a second round of funding (if it became available) or to be considered a leader in this work, helping them to get attention on their campuses for furthering STEM reform work. As one faculty member noted:

> I know our campus leaders are very interested in competing for funding if it were to become available from AAU. There's also a perception they don't want to be too far behind and in terms of changes. So that has helped get support for the work we're doing on our campus.

Another quipped, "The proposals for the creation of those centers had an impact because in a way, everyone wanted to be the one doing the best thing. I guess this friendly competition is the catalyst of any changes." AAU's success in encouraging competition is largely due to its uniquely high status in the field of higher education.

Administrators and faculty spoke about how AAU creating the initiative as a competition was able to elicit activities and conversation across the AAU universities and how no other organization could have the similar type of influence. As one administrator noted,

> I think they definitely play a prestigious role within the ecosystem that I'm embedded in. When they announced this initiative's program, what I thought was interesting is how it motivated and enticed many of my colleagues at other institutions. Everybody was having this conversation. "Hey, is your school putting one in?" That wouldn't have happened if just any other organization said, "Hey, we're interested in doing reform." It was because it was the AAU. There's a certain level of this will be something of importance to our university and to the landscape of the nation's STEM teaching.

Branding. As with the previous conditions, the success of branding and "name dropping" stems from the prestige of the AAU. AAU as an organization encouraged campuses to use AAU institutional examples to encourage change and actively collected examples to be shared. They also recommended that sites use their name to get buy-in from resistant departments or administrators. Many interviewees (project sites and points of contact) talked about the way they leveraged the name of AAU to have individuals on their campus consider new practices and new ways of doing work. Faculty members noted how using the name of other AAU institutions compelled faculty colleagues to try new teaching approaches. Here is how one faculty member described it:

> When you're making the case to faculty who are very focused on their own research agendas, the ability to name drop other institutions is very helpful. To be able to say, "I know from the AAU STEM network that Duke or Brown is doing this." The ability to have a little bit of "our peers are doing this, we ought to be doing this . . ." that has been enormously helpful.

While faculty were influenced by other campuses, administrators' attention was grabbed by AAU project site teams or points of contact dropping AAU's name. One participant describes the way she used the AAU name: "Having the initiative just exist has helped in me recruiting more support for new classrooms and money for professional development. I mentioned the Initiative and what I learned at a recent meeting and resources flowed." We could identify a difference in progress at project sites by campuses that actively leveraged the AAU name on the site. Some of the project teams called themselves an "AAU" project and utilize the AAU name on all of their communications. Some of the interviewees even referred to this as branding themselves as an AAU site and doing so to leverage the influence of the AAU organization to garner attention at their campus and leverage that for change. Therefore, using the names of other AAU institutions for generating buy-in among faculty colleagues and the AAU organization for administrators was noted as useful for influencing change.

Striving. Many non-AAU institutions are striving[10] to increase their prestige and to join the ranks or to boost their U.S. News & World Report rankings. Many individuals interviewed described how, in their conversations with campus leaders across the country, they have heard how striving institutions are watching this initiative and considering taking new directions as a result. As one collaborator we interviewed described,

> As I talk with universities, they're very much aware that this initiative is going on. Even if I'm talking at a research university that's not specifically an AAU university, AAU is—I mean that's the gold standard in terms of a research university so that many of the other universities, especially the large publics that aspire to become AAU members look at this effort. Right now, they are trying to decide if they will promote improved STEM education at the undergraduate level—is this something that's worth pursuing.

Many of the individuals interviewed described how the AAU created striving behavior by having visible meetings that others were aware of, creating prominent grants around teaching and learning in STEM education, and articulating new policy and priority setting around teaching. Each of these actions was watched and promoted reflection about next steps, particularly at other research universities. As an interviewee noted, "There are lots of eyes watching, leaders are considering, is this the next or a new way to gain prestige."

Recognition

Finally, universities are motivated by the prospect of public recognition for their work. This category includes both tangible and intangible recognition: tangible external rewards (e.g., awards or upward movement in rankings) and intangible added legitimacy within the STEM community and the higher education field. Recognition begets prestige, and prestige is a valuable commodity in academia. For example, AAU's Phase 1 criteria for membership include the number of faculty awards and fellowships, as well as the number of faculty members in the National Academies (Sciences, Engineering, and Medicine). As part of the initiative, AAU has worked on various forms of recognition, ranging from a national teaching award for STEM departments to exploring potential changes to their membership criteria that focus on teaching.

External Recognition and Reward. AAU worked for several years to establish a national award that would be given to departments that demonstrate excellence in teaching. They worked to get a major funder and a group to manage the process of the award. Various individuals described the importance of AAU in providing some kind of recognition or reward in support of quality teaching. Interviewees thought that a national award could bring visibility to good work. One interviewee commented, "In terms of influence, an award changes what it means to be quality or good. It redefines and makes visible a new, a different set of activities." Because leaders with access to resources care about obtaining awards, various interviewees believed this was a

successful approach. The fact that AAU established a national award for departments that excelled in STEM teaching was noted as an influential step. As one administrator noted, "An award from an elite organization will get people's attention, but a different organization might not be as successful with the strategy." Thus, the recognition was influential because it came from AAU, a prestigious organization. The award was also a source of fierce competition between institutions. As an administrator noted, "We are always counting—how many HHMI scholars, how many National Academy members, so this provides the space to build another area of competition."

Media and Press. Interviewees mentioned AAU's work with the media and press as an important lever to channel their influence. Interviewees consistently mentioned articles about the AAU initiative in *The New York Times* and *The Wall Street Journal* as influential to their campuses progress to move forward. There was the sense that AAU institutions, again based on their prestige, are noticed more when they are in the media. As one interviewee noted, "Leaders across higher education pay attention when Harvard or Penn are profiled in the papers. So that creates something bigger than what a single institution or project can do." Interviewees noted how media coverage leveraged AAU's strength as an influential organization and that presidents and provosts who can shape campus culture follow the media to help inform their decision making. One administrator describes the issue,

> My president said to his cabinet: "I need to know more about this initiative on my campus, because there's been a recent article about it in the press." Everyone then was contacting me and that got a lot of attention and support and furthered the project on my campus.

Additionally, people commented how the AAU as an elite organization is more likely to get media coverage than other organizations and, by extension, AAU campuses are more visible than other campuses. Many interviewees noted how their campus (or their organizational collaborators) would be unable to get the same coverage in media that AAU as an organization can garner. A collaborator commented on AAUs ability to influence campuses through the media, "Well, they are AAU—they can just draw more attention than others, they can open more doors at the media." AAU has a media and public relations office that provides access to national media outlets.

Discussion

As noted earlier, neither new nor old IT provides explicit discussion of influence strategies. The IT literature on change has very little articulation, definition, and examples of organizational influence strategies among field players (Scott, 2001). The few studies that exist tend to focus on the ways that influence can be used to alter language and norms often referred to as symbolic systems (Carpenter & Feroz, 2001) but very little focuses on direct influence, as we have done within this research. The closest parallels are emerging research on SAF and IOs in higher education—the latter has focused more on changes in policy than in practice (Gandara et al., 2017; Orphan et al., 2014). This study was able to provide concrete descriptions for what influence can look like within national organizations and other organizational field actors ranging from setting up institutional competition, branding, awards, site and campus visits, and partnering with influential organizations, to name a few. It builds on some of the more traditional "political" strategies offered within policy research of higher education IOs, such as incentives, advocacy, and convenings (Gandara et al., 2017; Orphan et al., 2014), and strategies offered in SAF.

This article also challenges the SAF approach and joins critiques such as Goldstone and Useem (2012) who argue that many of their initial assumptions were not nuanced enough, applied across the complexity of macro and meso forces, or did not envision enough continued applicability of IT concepts within the SAF. For example, Goldstone and Useem (2012) critiques point out that incumbents often initiate changes as was the case here, that elite institutions often drive changes—not just outsiders, that elite institutions often are shaping one another, and that competition is internal not just between different contenders. Thus, our study applies SAF concepts in higher education and adds nuance to the initial assumptions as other recent studies have begun to offer.[11]

The three types of enactments we document build on and add to some earlier studies that identified social pressure and incentives used within macro change contexts (Andreasen, 1995; Löffler, Van Dooren & Bovaird, 2009—see Appendix B). The enactments also provide specific articulation of how normative and mimetic isomorphic processes unfold. All three areas—social pressure, recognition, and prioritization—focus more on carrots than on sticks (which are often the emphasis in stakeholder theory or coercive isomorphism) and all are oriented to norm shaping, as predicted through normative isomorphism. Social pressure identified in some earlier organizational theories was found to be a key motivator of change (Zineldin, 2002). We identified an enactment close to incentives (emphasized in principal agent theory), which we labeled recognition, but broader than incentives in that it aimed in many ways to draw attention to good work (Löffler et al., 2009). Last, prioritization is not identified in any of the existing theories of meso-level influence. The enactments are important because they helped us understand the different types of motivations at the core of scaling behaviors through influence and shed light on the reasons why individuals or universities might perceive an organization as influential. Our research suggests that these mechanisms—social pressure, recognition, and prioritization—are

not wholly distinctive; indeed, we found that they tend to overlap and shape one another. For example, the desire of many research universities for public recognition in effect creates social pressure by fostering competition among universities. Similarly, the competition and peer comparison within social pressure creates the desire for prioritization, as universities involved with the initiative sought attention and commitment from AAU.

This analysis also allowed us to identify the common mechanism underlying all three enactments: *prestige*. Whether universities are striving for it, influenced by it, or seeking recognition for it, prestige is a ubiquitous motivating mechanism in AAU's toolkit and likely across higher education generally. For these reasons, prestige is fundamental to any discussion of AAU's influence. While some recent interpretations of IT challenge the relevance of traditional notions of prestige, particularly when compared with market forces (Davis & Marquis, 2005), prestige still carries significant power within the higher education sector. The data reflect that university leaders view the imprimatur of AAU as a highly persuasive justification for altering practices. Though beneficial for students, historically teaching reform was not seen as a priority among research university leaders because of the deeply rooted notion of teaching as inferior to research. Given the complexity of large-scale change in higher education, the appeal of the STEM initiative for universities is indicative of AAU's prestige and the weight of its approval. Yet it is important to consider whether changes will remain intact as isomorphic changes are sometimes superficial and not deep. Future research should examine whether and to what degree isomorphic changes lead to deeper and sustained changes in practice that this study was unable to explore.

In closing, policymakers, foundations, and higher education organizational field actors are increasingly interested in scaled changes that are uncommon to higher education (see Appendix G for information on future research and implications for practice). Studies that help shed light on mechanisms that lead to scale of key needed innovations will be valuable to efforts to improve higher education.

Appendix A

Study Background

The AAU STEM initiative was developed by the member organizations of the 62 most elite campuses in the United States and Canada with the goal of influencing AAU institutions to value and utilize evidence-based teaching practices—and to change the culture of research universities so that excellent teaching becomes as normative as excellent research. Years of national reports critiquing teaching and undergraduate education at research universities prompted AAU to undertake this initiative. AAU members are the presidents of the 62 AAU universities who convene twice annually, but AAU also convenes provosts, IR Directors, federal policy staff, and occasionally, deans. The Helmsley Charitable Trust provided funding to AAU to host a competition for eight AAU campuses to receive grants for demonstration sites aimed at having multiple departments utilize evidence-based teaching practices in STEM. The decision to focus on STEM fields relates to the long history of critiques raised on teaching quality in those fields (Fairweather, 2008; Freeman et al., 2014; Henderson, Beach, & Finkelstein, 2011). The hope was that the emphasis on teaching in STEM would then spill over into other disciplines. There has long been criticism that undergraduate teaching is given short shrift at universities in particular and is not valued as highly as it should be throughout the enterprise. AAU approached Helmsley[12] with the proposal that as the trendsetting organization for the enterprise, they could raise the value of teaching, particularly in STEM, and over time generate interest across more institutions and disciplines. And while many groups (i.e., higher education associations, accreditation, disciplinary societies) do try to influence higher education institutions, few have the legitimacy and prestige of the AAU and its member institutions.

Appendix B

Additional Literature for This Article

Other literature explored for this article, but not included due to space constraints, include concepts of social and personal pressure drawn from strategic management and marketing theories, incentives from principal-agent theory, and advocacy drawn from policy theories.

Influence processes or strategies are rarely described in meaningful detail within the literature on IT; this is because influence is conceptualized as a generalized force underlying the three forms of isomorphism (Powell & DiMaggio, 1991) instead of its own theoretical construct and component parts. Even though IT addresses purposeful agentic institutionalization through theories like institutional entrepreneurship, it does not provide guidance at the strategy level. As a result, we felt that additional theories from across organizational theory—and beyond, such as research on policy change among IOs—provided additional interpretive power. Furthermore, since IT is generally focused on tacit processes, its intentional use by actors to shape change is counter to its traditional purposes. Departing from IT, several studies across the organizational and policy literature have examined influence strategies in greater depth from a more strategic and intentional perspective. Often dealing with business relationships and hierarchies, these studies—though not perfectly analogous to our circumstances—inform our theoretical framework and findings. Another emerging key area is the literature on IOs influencing the education sector. While only a few studies exist in higher

education that we summarize, there is also a decade's worth of research in K–12 about influence strategies among IOs (Scott, 2001; Trujillo, 2014).

Social and Personal Pressure. Zineldin (2002) describes the effectiveness of social pressure in business relationships. He combines traditional strategic management and marketing theories with sociological and social psychological theories to develop a relationship management perspective on organizational influence in business. The author notes that traditional strategic analyses of business relationships are competitive and calculated, but given unpredictable market forces, companies should treat ongoing relationships as marriages—based on more authentic connections than efficiency and bottom line including shared interest and mutual trustworthiness. Establishing relationships based on real social bonds and reciprocity is thus a valuable influence strategy. Similarly, as in theories of social marketing, personal pressure is an effective means of changing individual and group behavior. For example, depending on the length of time (short or long term) and the societal dimension (micro, group, or macro), social marketers can develop strategies to influence a particular audience toward a desired change (Levy & Zaltman, 1975). Social marketers also encounter challenges with particularly apathetic audiences for whom a norm is institutionalized (Andreasen, 1995) and, in such cases, must devise strategies to not only change the norm and behavior but also influence the audience to *want* to change that norm or behavior. In the higher education research on IOs, Orphan et al. (2014) identify strategies aimed to influence through social pressure such as convening aimed at shaping views of higher education leaders or agenda-setting activities where higher education leaders are convening to examine an issue or problem and tasked to create an agenda to address the issue. Through conversations and agenda setting, they hope to engage leaders in making a more personal connection to the issue and increase social pressure of the group to encourage changes (Orphan et al., 2014).

Incentives. Incentives are also a useful tool for individuals and organizations seeking to influence other groups (Löffler et al., 2009). In principal-agent theory for instance, principals offer incentives to agents to perform certain activities or achieve results.

Though incentives are commonly financial in a typical employer-employee relationship, this is not always the case. Outside of the business firm setting, financial incentives may be improper. Where power is more balanced between the principal and the agent (weak principal and strong agent), or where reciprocity is expected, reputational rather than economic incentives might be more persuasive. For example, in a partnership between a professional association like the AAU and a university, exchanging funds may not be the most appropriate or effective way to encourage certain behaviors. Where the AAU has more prestige or name recognition within the field than the university, the reputational rewards to be gained from the partnership would be more valuable than monetary incentives. But monetary incentives have also been identified in higher education; Gandara et al. (2017) document how IOs use incentives such as monetary awards to adopt performance-based funding.

Advocacy. The higher education research on IOs also identifies many influence strategies that reflect policy influence strategies such as direct advocacy or lobbying, coalition building, and establishing formal agendas (Orphan et al., 2014). However, Orphan et al.'s (2014) study was focused more on higher education policy agenda formation, and the influence processes may not be directly applicable to a study aimed at altering campus practices, but we explored whether more direct policy influence strategies were deployed given they are common among IOs.

Appendix C

Overall Study Literature

The overall study was framed by the broad question: How does the AAU initiative achieve scale of reform in undergraduate STEM teaching and learning? Individual articles pursued specific areas informed by the theoretical perspectives brought to the study (described next) and inductive ideas that emerged.

In a major review of research on scaling reforms in policy and education, Kezar (2011) identified three key levers or strategies that have been present in studies of scaled changes in education: deliberation and discussion, networks, and external support and incentives. These strategies help overcome barriers common to scaling changes and encompass the qualities associated with achieving scale like ownership and underlying norms. These thee concepts were used as initial sensitizing concepts to examine scale.

In terms of theories of change, IT, organizational learning, systems theory, and institutionalization were used to frame the initial analysis of the overarching research question. As new ideas emerged inductively in analysis, new theories were brought in. IT appeared to have the most resonance within the initial data analysis.

In terms of organizational learning, the AAU leadership described ways that they were working to have participants adopt practices from one another's campuses, through the network, and how the eight demonstration sites were laboratories to try out new practices that they hoped would inform and be adopted by other campuses. In examining the five main objectives of the AAU STEM initiative, four of them relate to aspects of learning, including developing meetings for information sharing about best practices and STEM reform, working with institutions and departments to train faculty, and supporting project sites to implement the

framework and the development of the framework, which itself could be seen as a learning tool. The initiative was also informed by the collection of data. Surveys were conducted to determine the extent to which evidence-based teaching practices were used on their campuses. A major goal of the project was the development of measures that could help institutions determine their progress and learn how to improve implementation by use of data to inform their actions. Most of these practices could be characterized as actions that fit within organizational learning theories of scaling change.

Organizational learning is typically associated with a branch of the change literature that examines the role of cognition and mental processes within change. Organizational learning is the study of whether, how, and under what conditions organizations can be said to have learned. Within this stream of research, organizations are seen to change when individuals learn and collectively reorient the way that they approach conducting work. As a result, scholars tend to look at available data and information within organizations; the way that information is shared; facilitative mechanisms for learning such as teams, networks, or data dashboards; sharing of best practices; and, more generally, the ways in which individuals within organizations examine or understand concepts.

The AAU also articulated a systems approach to change. Systems theories examine the interrelationship of various subsystems within an organization and how organizations are interconnected. To change evidence-based teaching practices, professional development alone is insufficient as classroom practices are also tied to incentive systems, departmental norms, facilities, campus priorities, and student expectations, for example. In systems theory, change is most likely to be achieved when all aspects of the system are adjusted. While systems theory has the potential for scale, it does not define or provide mechanisms for scale that are offered by other theories like organizational learning, social movements, or IT (Kezar, 2011). Additionally, AAU also adopted an open systems theory of change that explored beyond the impact of the internal college system to other actors and players that affect the campus. Open systems theories emphasize how change processes are affected by external organizations, groups, and forces. While many studies of change adopt a systems approach exploring internal mechanisms like reward systems and policies as a way to influence change (Kezar, 2013), fewer studies in higher education adopt an open systems theory particularly as it applies to areas such as teaching and learning, often considered the domain of academic professionals. Open systems theory tends to be applied to issues like cost containment, Title IX, increasing regulation, and even diversity where higher education is seen as less open to internal levers for change and in need of external pressures or forces (Kezar, 2013; Zemsky, 2013).

Additionally, the project was informed by theories of institutionalization. Theories of institutionalization examine the organization or institutional part of the system and the ways in which the structure and culture shape and frame activities that are largely implicit or tacit. To create change, the underlying structures and culture must be altered or reshaped. Institutionalization theory suggests that the institutional infrastructure and leadership need to be supportive of changes for them to scale and be sustained. Institutionalization suggests the interrelationship of various aspects—tenure and promotion requirements, professional development, institutional commitment, and classroom assessment. It also suggests the ways in which policies and practices need to be altered in support of a change.

Appendix D

Interview Sample and Data

We review the rationale for each of these groups below. Key personnel/advisory board were able to describe their own observations about creating and implementing the initiative and perceptions about scale and what affected it and the role of influence. Faculty and administrators who are part of the project team have knowledge of how initiative activities influence the campus. Points of contact can directly speak to the influence of initiative activities efforts to scale pedagogical innovation. Last, collaborators provide an outside perspective on how they have seen the AAU initiative scale changes and AAU influence.

A customized interview protocol was developed for each of these different groups; however, we inquired about several core elements across the interviews. Overall, the interview protocols tap into all the key constructs related to scaling change—topic of the overall study (e.g., deliberation, network, external support) while also drawing on different theories related to organizational change that were part of AAU's theory of action (e.g., IT, organizational learning, systems theory—see Appendix C). The interviews allowed participants to describe their own involvement with the initiative, challenges and facilitators of scale, evidence about scale, perceptions of the initiative, what has worked and not worked, influence and strategies, ownership, sustainability and the like. Therefore, influence was one among many areas explored in the interviews, but influence ended up emerging across many of our other questions about scale, perceptions of initiative, and what worked, for example. The interview protocol was reviewed by an advisory board formed for the project that included STEM reform leaders as well as higher education scholars. Interviews were approximately an hour in length and conducted via phone. Some interviews with project teams lasted 2 hours. All interviews were tape-recorded and transcribed.

Appendix E

Code List

Initial Code List: Deductive Codes

- Prestige
- Legitimacy
- Coercive isomorphism
- Normative isomorphism
- Mimetic isomorphism
- Institutional entrepreneurs
- Changing norms
- Networks
- Competition
- Striving
- External recognition
- Institutional logics
- Framing
- Ideology
- Alliance or coalition
- Social pressure
- Advocacy
- Incentives

Initial Code List: Inductive Codes

- Branding
- Partnering with other influential organizations
- Development of the initiative
- Site visits
- Peer comparison
- Media and press
- National award

Final Code List

- Category: Prioritization
  - Subcode
    - Development of the initiative
    - Site and campus visits
    - Partnerships with other influential organizations
- Category: Social pressure
  - Subcode
    - Competition
    - Peer comparison
    - Branding
    - Striving
- Category: Recognition
  - Subcode
    - External recognition and reward
    - Media and press

Appendix F

Limitations and Positionality of the Researcher

Limitations. In terms of limitations, we had limited exposure to project sites for impromptu conversations with campus participants. We selected a variety of individuals to speak with who had different positions and involvement, but those individuals skewed toward those more involved with the initiative. Last, while the initiative has scaled changes at some project sites and some AAU campuses within its network, and while there is some evidence of impact beyond AAU sites through the formation of a broader research university STEM reform network, the project is ongoing; whether changes will be scaled further and maintained is unknown at this point.[13]

Positionality. The researchers are scholars located at a university and independent from the AAU initiative and funded by a National Science Foundation (NSF) grant to explore the initiative. Neither AAU nor NSF personnel were part of the study or advisory board. The study was completely independent from the initiative and there were no conflicts of interest to navigate.

Appendix G

Future Research

Future research is needed in this underresearched area. A future study that continues to follow this initiative (or others) over time will be useful to identify whether these enactments of influence—social pressure, prioritization, and recognition—lead to sustained change, whether all three areas continue to be relevant moving forward, and whether other enactments emerge. Given the trajectory of scaled change processes, we need studies at the beginning, middle, and end of such processes to fully understand the mechanisms and ultimate outcomes of such initiatives. It will be helpful to replicate this study within other scaled change projects to see if other enactments of influence are used based on a different type of change—for example, technology, access, diversity. Kezar (2013) has identified how different types of changes often require customized influence strategies. Similarly, another organization (field actor) may need to use different enactments of influence. Stakeholder theory and principal-agent theory emphasize how the relationship between organizations can significantly shape how influence is deployed (Andreasen, 1995; Löffler et al., 2009). Some studies among field actors in higher education suggest this might also be the case. Accreditors, for example, can deploy resource dependency strategies and more regulatory "sticks" based on their ability to shape whether institutions have access to federal financial aid (Mizruchi & Fein, 1999).

In terms of implications for practice, this study provides examples of tangible influence strategies for organizational field actors. Influence is generally considered an implicit strategy and not one that organizations conduct strategic planning around, even though it is an important lever for change (Kezar, 2013). This work builds on theories such as

institutional entrepreneurship by providing deeper understanding of the specific mechanisms—social pressure, recognition, and prioritization—that can be embedded and developed further into institutional entrepreneurship work. This article helps articulate some of the influence strategies that external organizations might consider using and intentionally deploying to influence networks of individuals and whole institutions. Certainly, the AAU is unique in its prestige and can realize influence strategies that many other organizations are not able to. However, planning an influence strategy and targeting individuals, groups, and organizations over which one has influence is a generalizable approach that can be utilized by other organizations, as well as maximizing different enactments. It is therefore our hope that organizations will evaluate their own power and prestige in the field to apply these enactments in practice in order to more effectively scale reforms.

Another important implication from this study is deploying influence strategies that are within the organization's capacities. Tactics such as sites visits, awards, media, and press are more broadly generalizable, while other approaches such as leveraging the AAU brand are likely more limited and focused on AAU's unique niche as an elite and prestigious national organization. Yet all organizations will have a different niche and unique capabilities that they can draw on as they think about influencing higher education stakeholders. For example, the Association of American Colleges and Universities—known for liberal education and working with small liberal arts colleges—is influential through its series of workshops that draws teams of faculty and administrators and is known for creating strong dialogue across these two groups, more so than other national organizations. Every organization has its own audience of groups or individuals over whom it holds influence. Furthermore, organizations have modes of enactments of influence that fit their strengths and place within the organizational field. To develop a strategic influence strategy, organizations can consider their audiences and their capabilities and intentionally target their approach to those audiences.

Notes

1. AAU and its members have a symbiotic relationship. AAU—the organization—and its members are often referred to as one and the same.

2. We recognize that at AAU institutions, there are many other projects focused on STEM reform, predominant among them National Science Foundation projects. Though we cannot fully tease out the influence of AAU from these other projects, we did ask interviewees to try to sort out the unique contribution they could ascertain from the AAU initiative.

3. This article is focused on *how*—not *whether*—AAU had an impact on and influenced AAU (and other) institutions to change in terms of greater valuing or teaching (and to what degree). The overall initiative conducted an analysis of this question and the impact continues to be studied over time.

4. This article focuses on influence, which we define as the capacity or power of persons to be a compelling force on or produce effects on actions, behavior, and opinions (Pfeffer, 1992).

5. Though we found theories in line with our data, no single theory addressed all of its key components. For example, stakeholder theory assumes that organizations choose relationships with groups that influence or are influenced by them and suggests that organizational stakeholders seek to influence decision-making processes (Wagner Mainardes, Alves, & Raposo, 2012). However, stakeholder theory is closely tied to resource dependence and, therefore, does not address the non-resource-based incentives and subtle reputational pressures at the core of AAU relationships. Additional theories explored included regulation theory, principal-agent theory, and social marketing theory, among others, and though they each added conceptual value to our analysis, no single theory was more aligned with our observations than IT (Löffler et al., 2009).

6. For example, take Brint and Karabel's (1989) research on the dual mission of community colleges (transfer and vocationalism with an emphasis on the rise of vocationalism), while it outlines the influence of ideologies and deference to more powerful institutions and interests (community colleges being unable to compete with 4-year institutions and eventually the desires of business), there are not tangible strategies described by community college administrators, they are reacting to influences and seizing opportunities; however, they are not agentic in the manner we were studying within the AAU initiative.

7. A few recent studies have called for further research to explicitly examine influence processes as part of IT (Oliver, & Holzinger, 2008). Oliver and Holzinger (2008) suggest a framework for examining influence strategies in future studies that proposes four firm-level strategies—proactive, defensive, anticipatory, and reactive—for managing the political environment effectively but conduct no such study themselves.

8. Studies of isomorphism have typically been post hoc and demonstrated how these distant forces and ideas become embedded within both institutions and the day-to-day thoughts and actions of individuals (Mizruchi & Fein, 1999; Morphew & Huisman, 2002). This has been a critique of IT studies, and recently, there has been a move to study issues more in real time (Suddaby & Greenwood, 2005).

9. Participants in the study referred to AAU as an organization typically rather than the leaders within it. We refer to AAU in the findings. While this might seem like we are anthropomorphizing the organization, this is true to the way participants described it. It is true that AAU leaders and staff enacted these strategies, but they are perceived by participants as from the organization itself in many instances.

10. Striving has been detailed in literature in IT as a mode where institutions follow the behavior of more elite institutions. AAU is often noted as the trendsetter for striving behavior in studies (O'Meara, 2007).

11. Using Neo-IT and SAF's perspective, one might also see AAUs actions as wielding power and position to alter the field's cultural rules. Another article from this study explores the way AAU undertook such activity—how they framed and messaged the change effort and used institutional logics as a way to understand AAUs actions in this arena. In this article, we found the notion of influence a more precise understanding because it reflected the language used by interviewees for the three key enactments (direct

actions and strategies) and the intentions and goals communicated by AAU.

12. The National Science Foundation had little involvement in the initiative and the AAU was not constrained in its planning from a "resource dependency" perspective.

13. The one disadvantage of not conducting a historical study is not being able to identify whether changes will be fully scaled.

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