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Protecting Scientists from Gordon Gekko: How Organizations Use Hybrid Spaces to Engage with Multiple Institutional Logics

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Abstract. Previous work on institutional complexity has discussed two solutions that organizations internally deploy when externally engaging with multiple institutional logics: blended hybrids, in which logics are combined throughout the organization, and structural hybrids, in which different logics dominate in different compartments within the organization. While blended hybrids have been extensively investigated, few studies have examined how structural hybrids are constructed and maintained. We address this imbalance by studying university–industry research centers as instances of distinct organizational spaces used to engage with a minority logic. We found that these spaces require three kinds of work: (a) leveraging, where dominant logic practices are drawn on to achieve minority logic objectives; (b) hybridizing, where the practices inside the space are modified to allow engagement with the minority logic; and (c) bolstering, where the space is shielded against excessive minority logic influence and anchored back into the organization. Furthermore, contrary to the existing literature, we found that the spaces were hybrid, rather than being dominated by a single logic. Our finding is likely generalizable across many instances of structural hybrids given the integration problems that organizations with pure single logic spaces would face, combined with the usefulness of hybrid spaces. Our study is novel in revealing the work needed to sustain hybrid spaces and questioning the previously held conceptualization of structural hybrids as made up of single-logic compartments.

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Keywords: institutional complexity • institutional logics • hybrid organizations • institutional theory • university–industry relations

Introduction

Specialized units that allow organizations to pursue idiosyncratic activities are common in organizations. For example, Western investment banks create Islamic banking units that are specially designed to allow bankers to conduct operations that are Sharia compliant and conflict with traditional banking practices such as charging interest on loans. Similarly, many universities use specialized university–industry centers to allow researchers to collaborate with industry on research that is more applied and market-oriented than traditional academic research and that conflicts with traditional academic norms of open publishing and “blue sky” research. Furthermore, many large corporations deploy teams responsible for social impact activities where, in contrast to the rest of the organization,

their success is not measured by their impact on the financial bottom line, but rather by the amount of social value they create. In all of these cases, organizations create a “space” where they can carry out activities that diverge from their normal way of operating and can satisfy the needs and interests of important external constituencies.

From an institutional theory perspective, all of these organizations are engaging with an alternative institutional logic and are becoming hybrid organizations in the process. Doing so provides organizations with resources, legitimacy, or external appreciation (Nelson 2005, Durand and Jourdan 2012, Heinze and Weber 2016). It also allows them to engage productively with organizations that function according to different logics (think of university–industry research centers) or engage in activities not relevant

or legitimate according to their normal logic (think of intercollegiate sports departments at universities). But hybridity also brings with it tensions and conflict (Pache and Santos 2010), and, to successfully manage these challenges, organizations are adopting a “structural” solution (Greenwood et al. 2011).

In prior work, researchers have identified two solutions to the problem of managing hybridity: blended hybrids where the whole organization is characterized by elements of multiple logics; and structural hybrids where different parts of the organization adhere to different logics, resulting in their compartmentalization into structurally distinct organizational spaces (Greenwood et al. 2011). Interestingly, while both approaches to managing hybridity are discussed at length in theoretical contributions (Kraatz and Block 2008, Greenwood et al. 2011, Besharov and Smith 2014), and while blended hybrids have been investigated empirically in several studies (Reay and Hinings 2009, Battilana and Dorado 2010, Jay 2013, Pache and Santos 2013), structural hybrids have received little empirical attention. In other words, while we have an empirically grounded theory of blended hybrids, structural hybrids remain underresearched.

In this paper, we seek to address this gap and extend theories of hybrid organizing by empirically investigating how organizations manage structurally distinct spaces as a solution to dealing with institutional complexity. We believe that the relevance of this research focus arises not only from the frequency of such spaces but also because they are likely to function differently from blended hybrids and as such warrant a dedicated investigation. While structural hybrids must, like blended hybrids, manage the tensions that arise among multiple logics, they face the additional challenge—not present in blended hybrids—of integrating the resultant spaces into the organization. Hence, we set out to examine how organizations manage the challenge of creating and maintaining an organizational space characterized by a logic different from the dominant logic that characterizes the rest of organization.

We conduct an inductive study of eight university-industry research centers located in large research universities. While the centers were firmly rooted within an environment dominated by the academic logic emphasizing research freedom and open publishing, they were also influenced by a commercial logic that valued research and development (R&D) subject to profit-oriented commercial requirements. The centers were organizational spaces purposefully constructed and maintained to allow their universities to collaborate with industry partners, a constituency adhering to a commercial logic. Using standard terminology, from universities’ viewpoint, the academic logic was the dominant logic and the commercial logic was the minority logic (Durand and Jourdan 2012).

We found that these special spaces are created and maintained by three kinds of work: (a) leveraging, where

dominant logic practices are drawn on to achieve minority logic objectives; (b) hybridization, where the practices inside the space are modified to allow engagement with the minority logic; and (c) bolstering, where the space is shielded against excessive minority logic influence and is anchored back into the wider organization. Furthermore, while previous theoretical work has often characterized such “compartments” as governed by a single logic, we found somewhat surprisingly that the spaces in our study were hybrid and we therefore call them “hybrid spaces.”

Overall, our study makes two important and novel contributions to the literature on hybrid organizations. First, it extends theorizing on structural hybrids by revealing the kinds of work that are needed to maintain spaces in which minority logics play a role. Second, it challenges the assumption that structural hybrids always consist of single-logic compartments. In fact, the hybridity of the spaces we studied was functional in that it helped to reduce the problem of integrating the compartment with the broader organization while adding value by including aspects of the minority logic. We speculate that compartments completely dominated by a single logic may be relatively rare given these integration problems and the practical usefulness of having compartments characterized by hybridity. As a result, we suggest, subject to further study, that organizations adopting structural solutions to hybridity are more likely to be mosaics of small hybrid spaces, where each space is characterized by different combinations of hybridity rather than representing a simple model of structural hybrids as large compartments, each dominated by a specific logic, as presented in the literature. This characteristic also distinguishes structural hybrids as captured by our study from blended hybrids (e.g., the hybrid organizations frequently discussed in recent research) where multiple logics are uniformly combined throughout the whole organization.

Managing Institutional Complexity in Organizations

Institutional logics are the master principles that shape practices, provide vocabularies of motives, and underpin identities (Alford and Friedland 1985, Thornton and Ocasio 2008). Recent work has explored how organizations are affected by the presence of multiple logics in their institutional context—a situation labeled as “institutional complexity” (Kraatz and Block 2008, Greenwood et al. 2011)—and the challenges that arise as the external institutional complexity is internalized.

A common finding in this literature is that exposure to the prescriptions stipulated by alternative logics is a challenge and a source of tension for organizations; for instance, intraorganizational conflict or even paralysis may ensue as organizational members adhering to different logics disagree over which decisions to make

and which practices to adopt (D'Aunno et al. 1991, Heimer 1999, Thornton 2002, Kraatz and Block 2008, Reay and Hinings 2009, Pache and Santos 2010, Greenwood et al. 2011, Besharov and Smith 2014, Raaijmakers et al. 2015). However, internalizing multiple logics may also bring benefits to organizations (Almandoz 2012, Jarzabkowski et al. 2013b, Kodeih and Greenwood 2014, Ocasio and Radoynovska 2016, Ramus et al. 2017), motivating them to even wittingly seek out complexity (Greenwood et al. 2011), for instance, in the attempt to address alternate audiences (Fini et al. 2017). But whether sought out wittingly, or a result of unavoidable complexity in an organization's environment, it is clear from the literature that dealing with institutional complexity is a common challenge facing many organizations.

Blended Hybrids

Recent work has explored the different solutions used by organizations in response to institutional complexity. One strand of this work has focused on blended hybrids (or, alternatively, "hybrid organizations") where multiple logics are present throughout the organization (Greenwood et al. 2011). Examples include commercial microfinance lenders (Battilana and Dorado 2010), social enterprises (Pache and Santos 2013, Battilana and Lee 2014) and public-private partnerships (Jay 2013). Hybridization enables these entities to develop capabilities not achievable by organizations rooted in a single logic; for instance, social enterprises are able to pursue social mandates without depending on donations or government subsidies (Tracey et al. 2011, Battilana and Lee 2014). Blended hybrids, however, also face difficulties, including conflict between organizational members recruited from different backgrounds, ambiguity in decision-making and strategic direction, and external legitimacy challenges (Besharov 2014).

Existing work suggests that blended hybrids use various practices to mitigate these issues. Battilana and Dorado (2010) outline how developing a unitary organizational identity helps commercial microfinance entities to avert internal divisions along subgroup identities; hiring and socialization policies are crucial to achieving this aim. Alternatively, blended hybrids may use formalization to separate core practices associated with each logic from more incidental practices which subsequently enables productive collaboration between representatives of different logics (Ramus et al. 2017). Pache and Santos (2013) find that blended hybrids use selective coupling; that is, they combine various intact elements from different logics to project legitimacy onto external stakeholders. A special type of hybrid organization is represented by boundary organizations which deploy a number of practices to facilitate the production of outcomes when constituents from diverse institutional realms are involved (O'Mahony and Bechky 2008, Perkmann and Schildt 2015).

Blended hybridization can also occur when mature organizations diversify into a different field of activity (D'Aunno et al. 1991) or experience pressure to conform to a newly salient logic (Reay and Hinings 2009, Raaijmakers et al. 2015). For example, when healthcare organizations in Canada, characterized by a professional logic, had to address the increasing influence of "healthcare as business," they developed various organization-wide mechanisms that allowed them to contain tensions arising from the rivalry of logics (Reay and Hinings 2009). Depending on their status, organizations may merely incrementally adapt their practices or enact more radical change in order to embrace a newly relevant logic (Kodeih and Greenwood 2014).

Structural Hybrids

In addition to blended hybrids, previous work has also considered structural hybrids where different subunits of an organization operate according to different logics, resulting in the compartmentalization of the organization into distinct spaces (Kraatz and Block 2008, Greenwood et al. 2011). For example, U.S. intercollegiate athletics involves universities building compartmentalized sports units which enable them to address different audiences, but may also induce goal conflict and intergroup struggle (Kraatz and Block 2008). In particular, larger organizations, and those that engage with additional logics in a witting manner, may seek to contain the exposure to complexity to specific parts of the organization in order to avoid the risks and costs of radical organizational transformation involving large-scale restructuring of organizational practices (Pache and Santos 2013) and organizational identity change (Glynn and Lounsbury 2005, Battilana and Dorado 2010).

While containing each logic within dedicated compartments may alleviate some of the challenges faced by structural hybrids (Jarzabkowski et al. 2013a), it may also bring considerable integration challenges and even the risk of organizational fragmentation (Greenwood et al. 2011). Yet few studies of how organizations deal with the challenges of compartmentalization have been conducted and our understanding of how organizations accomplish this remains hazy. An exception is work by Jarzabkowski et al. (2013a) that—as part of a wider study—proposes "splitting" as a strategy for managers trying to deal with paradoxical demands. But while this study identifies compartmentalization as a strategy, it does not elaborate on how actors accomplish it. Overall, we believe that further study of structural hybrids would be a useful addition to the current literature.

Research Question

In most cases of structural hybrids, including those we mentioned in the introduction, there will be no perfect symmetry between the logics present in the organization. Whether it is a case of creating a compartment in

an existing organization, or building a new organization characterized by structural hybridity, the logics will likely not be equally central to the organization (Besharov and Smith 2014). We therefore follow Durand and Jourdan (2012), and refer to the primary logic of the organization as the “dominant logic” and additional logics as “minority logics.” By minority logic we mean a logic that plays a lesser role in informing an organization’s objectives and practices, compared with the dominant logic. By implication, external minority logic audiences control a smaller share of an organization’s potentially accessible resources compared with dominant external resource holders.

As structural hybridization has been poorly investigated in existing studies, we believe there is a need to explore how organizations create and maintain organizational spaces in order to manage institutional complexity. Rephrased as a research question, in this study we ask: how do organizations rooted in a dominant logic engage with a minority logic using a structural solution to hybridity? This question can be broken down into two subquestions: First, what are the characteristics of the spaces that organizations build in order to engage minority logics? Second, how do organizational actors go about maintaining this structural solution?

Research Context: The Modern Research University

To answer our research question, we studied university-industry research centers at large research universities. Research universities are an ideal setting to study organizational responses to complexity given recent external pressures to conduct more applied research. Research universities, in addition to offering education to their students, have a primary mission of conducting high-quality academic research. Yet policy makers and university managers have been exerting pressure on these universities to embrace industry-oriented research. For example, in the United Kingdom, some government funding programs require university researchers to recruit industry partners willing to fund a portion of any proposed project in order to increase the economic impact of these projects. This strategy goes hand in hand with efforts to make academic scientists more entrepreneurial by commercializing their inventions (Jain and George 2007).

However, resources for university research are still primarily provided by government or research charities, with contributions from the private sector amounting to only 6% on average across OECD countries (OECD 2016). The relative insignificance of industry contributions indicates that, in terms of institutional logics, public science (academia) still represents the dominant logic guiding universities’ research while commercially oriented science constitutes a minority logic. Moreover, observers and participants have noted that the promotion

criteria and cultures of large research universities are still overwhelmingly linked to traditional measures of scholarly performance and that incentives are not aligned with “technology transfer” (Siegel et al. 2003, Lach and Schankerman 2008, Pain 2008).

The differences between the academic logic and the commercial logic can be mapped against four dimensions (Sauermann and Stephan 2013). First, in terms of the nature of work, academic research tends to be more basic compared with industry scientists’ more practically oriented research (Argyres and Liebeskind 1998). This is the reason academic science—uncertain and distant from application—is predominantly publicly funded rather than being funded by private sector firms (Nelson 1959).

Second, in terms of workplace characteristics, public science places greater emphasis on the autonomy of scientists whereas commercial science is often conducted as part of larger-scale and hierarchically coordinated activity (Lacetera 2009). Research organizations in commercial science therefore look more like a corporate work environment than the academic environment of public science.

Third, public science is underpinned by values and motivations that differ from those informed by the commercial logic (Merton 1973, Polanyi 2000). Academic scientists’ values are typically informed by the desire to autonomously engage in intellectual challenges; past research has shown that they typically accept lower salaries in return for being able to do so (Stern 2004, Aghion et al. 2008). Within firms, the creation and exploitation of knowledge for profitable new technology and products is rewarded, rather than the originality of new knowledge (Murray and O’Mahony 2007).

Fourth, while in academia individuals seek to disseminate their findings as widely as possible (Dasgupta and David 1994), commercial firms typically practice secrecy or seek other types of intellectual property protection in their attempt to appropriate the benefits from original knowledge (Cohen et al. 2000). In academia, publishing and academic impact determines the distribution of resources and the fate of both individual careers and universities’ organizational performance in a way that is very different from the norms for distributing rewards in the commercial science where market measures are key indicators.

We summarize some of the main differences between the academic and commercial logics in scientific research in Table 1.

Naturally, the above depiction of the duality of academic and commercial logic does not always cleanly map onto the differences between universities and firms, as many universities do indeed engage in commercially relevant research and many corporations effectively run laboratories where some of their R&D scientists pursue academic-style research (Cockburn and Henderson 1998, Murray 2002, Owen-Smith 2003, Sauermann and Stephan 2013). However, the

differences between the two logics are significant enough to not only make universities different from firms but also to occasionally incite deep conflicts.

For example, a controversy arose in 1999, when the University of California at Berkeley accepted \$25 million from Novartis' agribusiness arm to fund the department of plant and microbial biology. The deal provoked an angry outcry at Berkeley and in the wider academic community amid fears that it would undermine the independence of academic science (Washburn 2000, *Nature* 2001). A debate ensued about the relationship between the university and industry in modern society, and whether (and how) industry funding could be used to effectively support fundamental academic research.

This example illustrates that contradictions between academic and commercial logics not only exist, but are also responsible for the occasional eruption of tension. This situation continues despite the fact that university patenting has substantially increased in the last 30 years and many universities have created technology transfer offices to mediate this tension (Mowery et al. 2001). Research also shows that relatively few academics engage with industry for the sake of commercial profit while many do this for the purpose of furthering their academic research agendas (D'Este and Perkmann 2011), and that academics affiliated with university–industry research centers are more likely to experience role strain (Boardman and Bozeman 2007).

The above suggests that university–industry relations are a useful setting for the present study. For academics, interacting with industry means, if not actively endorsing, at least accepting the legitimacy of the commercial principles and norms practiced within firms. As a result, engaging with industry may lead to questions over the applicability of public science's mandate of open disclosure, or whether success should be measured using academic outputs, commercial success, or personal financial gain.

Data and Methodology

Setting

We studied university–industry centers, which are specialized organizational units within universities that perform research activities in collaboration or coordination

with industry partners. Research pursued in such centers is typically more commercially oriented than within the standard departmental academic context. For firms, centers are vehicles for establishing in-depth collaboration with academia and to access state-of-the-art knowledge in specific academic fields. For academics, centers provide a stream of medium-term funding that can be used to employ research staff and purchase laboratory equipment.

We started our research with an in-depth study of one university–industry center at an EU university in order to investigate the mechanisms by which the university managed the institutional complexity that we expected to prevail in this setting. This exercise yielded interesting initial insights from ten interviews that we subsequently sought to cross-validate by studying a number of additional centers. We adopted this approach as each of our cases was relatively small, and, hence, a single case study would have yielded insufficiently detailed data for inductive data analysis.

We added additional centers to our sample until we felt that we had reached saturation in the sense that we did not gain substantially new information from studying more centers. We obtained a final sample of eight university–industry research centers at three EU research universities. Our objective was to investigate the process by which these centers functioned rather than working toward a variance theory (Mohr 1982). Therefore, our rationale for selecting multiple cases was not to obtain variation with respect to specific variables that may affect outcomes; rather, it served the purpose of having a sufficiently large evidence base that provided multiple instances of each open code we were expecting to find. Our findings did not subsequently uncover essential cross-case differences with respect to our research question.

The centers we studied were typically established for a period of five to ten years. The amount of industry funding provided for a center ranged from \$0.8 million to \$8 million annually, representing sufficient resources to employ 5 to 15 researchers. Four of the centers we studied had one single industry sponsor, while one-fifth was funded by two firms linked via a supplier relationship. Three centers successfully raised government funding and involved multiple firms. Centers

Table 1. Academic vs. Commercial Logic in Scientific Research

| Dimension | Academic logic | Commercial logic |
|------------------------|-------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| Economic system | Public/not-for-profit | For profit |
| Nature of work | Basic science: the purpose is to pursue scientific novelty and contribute to scientific debates | Applied science: the purpose is to use knowledge to solve problems and develop products |
| Allocation of tasks | Project choice based on personal autonomy and scientific curiosity | Project choice is hierarchically coordinated and large scale |
| Use of output | Public dissemination of research (publishing with no restriction) | Contribution to innovation projects (often requires confidentiality or protection) |
| Reward for individuals | Scientific reputation (field-wide) | Organizational recognition |

were commonly governed by bilateral committees representing academic and industry partners. We use pseudonyms when referring to specific centers to preserve their anonymity. Information on the centers is summarized in Table A1 of the online appendix.

Data Collection

Interviews. Reflecting our interest in examining the work performed creating and managing distinct spaces (reflecting our findings, we call these “hybrid spaces”), we conducted 76 interviews with members of the eight university–industry centers lasting one hour on average, primarily between 2010 and 2012 (see Table 2). When presenting the findings, we use codes for referring to specific interviewees; we use the suffix “u” to designate university employees and the suffix “i” for industry partners. We drew on a semistructured interview protocol that was refined and adjusted over time in order to account for data saturation and newly emerging analytical directions. Our sample of respondents in each center included senior academics, junior academics, and administrative staff members, as well as senior and junior staff from participating firms. The senior members also occupied, without exception, senior roles within the universities that hosted the centers, and hence their statements provided information about both their centers and how the centers related to the wider organization. We also interviewed individuals who were familiar with failure. One (interview code F1u) was an experienced technology transfer manager who had been involved in creating a series of centers at one of the universities. The others were a faculty dean (F2u) and a director (F3u) of a prospective center that was negotiated between a university and an industry partner but failed to be fully realized. These interviews provided us with additional understanding of the presence or absence of factors that led to failure.

Table 2. Interviews

| Respondents | Number of interviews |
|------------------------------------|----------------------|
| University managers | 10 |
| Center directors | 8 |
| Academics: professors | 19 |
| Academics: junior and PhD students | 20 |
| Industrial collaborators | 19 |
| AUTO | 12 |
| BIO | 8 |
| DRUGS | 6 |
| EARTH | 12 |
| ELEC | 13 |
| MACHINE | 4 |
| MOTOR | 11 |
| PHYSICS | 7 |
| Other | 3 |
| Total | 76 |

A first set of questions addressed various general characteristics of the centers, including how they were organized and governed, how objectives were set, and how differences between industry and the university (and any resultant tensions) were managed. To obtain as much detail as possible, in a second set of questions we asked respondents to report on specific projects they had participated in. In this way, we were able to extract retrospective accounts from respondents that we subsequently triangulated with accounts given by others. Specifically, we asked our informants to tell us about the objectives and organization of the projects, the nature of their outputs, and the benefits that the projects generated for them and for the university more broadly. We addressed the consequences of multiple logics by prompting our informants on aspects such as open publishing, intellectual property, the direction of the research, the division of labor within the projects and any other challenges that arose. All interviews were recorded and transcribed.

Archival Data. We also collected secondary data about each center from published material, including web sites and press releases. These sources contained information about the centers’ objectives, work programs and governance structures. From some centers, we were also given unpublished material, such as agendas and minutes of quarterly meetings and internal reports. These documents, amounting to 10 to 20 pages per center, helped us to understand how these centers functioned, enabled us to prepare for the interviews and proved instrumental for the initial narrative accounts that we wrote for each center.

Interactive Validation and Observation. We also collected information on several occasions in which we interacted with individuals involved in some of the centers. The first author organized a half-day conference on university–industry centers that involved center participants as speakers and audience members. The attendees were presented with a written report on our findings and provided feedback that helped us to refine our insights. In addition, we participated in four meetings between university and industry personnel aimed at establishing the strategy, ground rules and contractual details for a potential center, as well as a board meeting of another center. These interactions and observations helped our pattern recognition when theorizing the underpinning mechanisms at work.

Data Analysis

In line with our research question, our unit of analysis was the university–industry center. We analyzed our data to uncover the work that center actors carried out to create and maintain the centers within the overall university. For this purpose, we used both informants’

statements that applied to centers generally and information they conveyed to us about specific projects which served as our primary unit of observation. Detailed information about how they organized projects and how they satisfied multiple and conflicting demands provided us with more granular information about how center work was pursued.

We analyzed our data using the following steps. First, we compiled a narrative account of each center, based on the information gleaned from the interviews and additional documentation. We documented the circumstances in which each center was created, its aims and objectives, its governance structure, the identities of stakeholders, its areas of activity, and the outcomes achieved. These accounts sensitized us to important themes, and helped us to identify regular patterns across our cases.

Second, we used Atlas.ti software to perform open coding to identify and validate empirical themes that emerged inductively from our transcripts. We searched for recurring themes describing how participants approached and managed the creation, organization and maintenance of centers in which they collaborated with industry. As our analytical focus was on hybridization, we focused on capturing the kind of activities that related to both tensions and complementarities between the academic and commercial logics present in the participants' context. In other words, we probed how participants dealt with institutional complexity. For instance, we coded for passages where participants dealt with issues that arose from both logics being present in decision situations or informing their objectives. We also sought to capture circumstances where participants perceived benefits from both logics being present, or pointed to benefits arising from the presence of a logic other than the one they commonly prioritized. Throughout this exercise, we remained sensitive to how informants judged the consequences of the logics differences for the centers and their wider organizations, regardless of whether they were benefits or tensions. For example, the first-order concepts that we identified in this way included items such as "open sharing of knowledge helps firms build new areas of expertise" or "use of industry-like performance management practices." We accepted first-order codes only if they emerged repeatedly from the data and across several cases.

Third, following Gioia et al. (2013), we worked inductively to collapse our first-order codes into second-order themes and subsequently aggregate dimensions, cycling back and forth between our emerging categories and the raw data. When first-order codes appeared logically related, we grouped them together to form a second-order theme, and we followed the same procedure with the second-order themes to group them into three aggregate dimensions. We went through this exercise multiple times as we refined our emerging

middle-range theory, and removed higher order themes that did not speak to our research question. Our data structure is represented in Figure 1, and we provide illustrative quotes in Table A2 of the online appendix. Through this inductive exercise, we identified the abstract types of activities that participants engaged in to create, organize, and maintain the hybrid spaces in which they worked; this resulted in three aggregate dimensions that form the backbone of our theoretical model.

An important issue often affecting inductive studies is the presence of a success bias. When only successful cases are analyzed, then it does not automatically follow that identified processes or mechanisms are causally necessary or sufficient to induce certain outcomes. As it is common with inductive studies, the centers in this study could not be unequivocally classified into successful and unsuccessful cases for two reasons. First, we studied them part way through their lifetime and not post hoc; this approach helped us to mitigate retrospective bias and secure access but also made it impossible to know their degree of success over their entire existence. Second, university–industry centers fail and succeed less clearly than, say, start-up firms because they are judged against multiple performance criteria, and the performance criteria themselves, such as the creation of useful knowledge, are "soft."

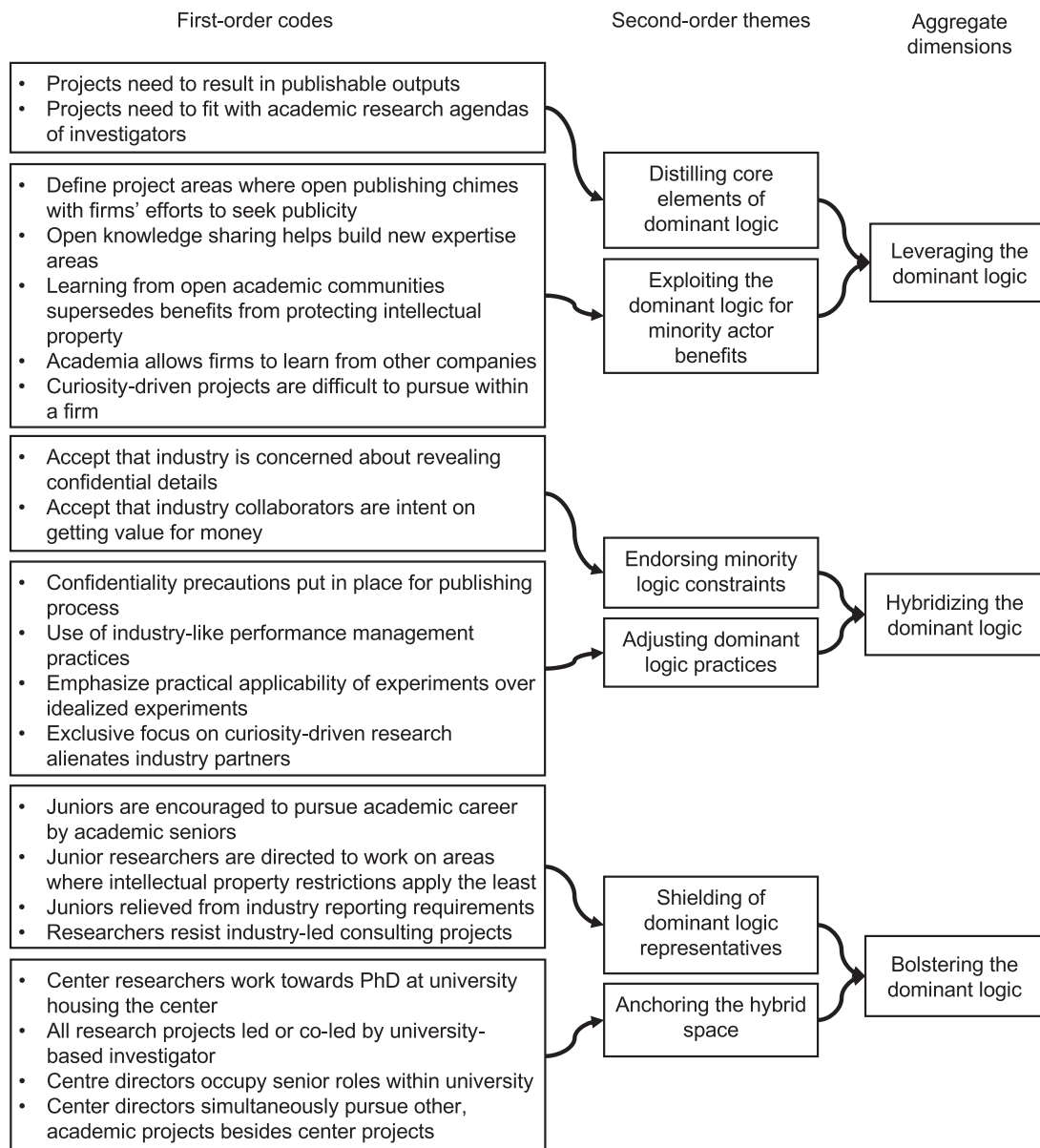
For these reasons, we resorted to an instance-based approach to tentatively judge causality. For example, one of the mechanisms that we identified was "shielding," whereby the junior academic researchers in the centers were protected from the excessive influence of the commercial logic. In one of the centers, informants had told us that junior researchers had been unhappy with having to carry out "industrial" work and the center subsequently suffered from high turnover among junior researchers. By considering this and other instances, we were therefore able to confirm that shielding was indeed a process ingredient that was required to successfully run centers. For the same purpose, we used counterfactual accounts (expressing what has not happened but could have under different conditions) given by informants to determine whether a factor did in fact underpin an outcome.

Findings

University–Industry Centers as Distinct Spaces

The university–industry centers we studied constituted formally established organizational units within their universities with budgets used predominantly for employing staff and buying equipment. The following statement from MOTOR's presentation materials aptly illustrates the relative autonomy of the centers: "Within the university, the center is an independent unit with its own budget and accounting. Its activities are governed

Figure 1. Coding Structure



Note. In our setting, academic logic is the dominant logic, and commercial logic is the minority logic.

by its own board of directors appointed by the university in consultation with the member companies.”

Further illustrating the relative autonomy of the centers, members used “we” when they talked about center activities and center life, and conceived the center as an “entity” that was nested within the larger units of the department and the university as a whole. This occurred despite the fact that, in many cases, centers were described as “virtual” because they spanned different departments within the university. External constituencies perceived the centers as a “one stop window” for their R&D needs.

Despite their relative autonomy, the centers were administratively integrated into the university-wide

organizational structure. For instance, many centers funded PhD students who worked on degrees that would be awarded by the broader institution, but based on research access and direction provided by the centers. Job interviews with prospective research personnel were held using the same procedures and criteria that applied generally in the university. For the centers’ academic staff, the standard criteria defined by their university for performance assessment and promotion applied.

However, the centers’ staff profiles differed from those of the broader universities of which they were a part in that they often included industry-oriented individuals hired as program managers who had previously worked

in industry. These individuals performed the day-to-day management of the centers and liaised routinely with industry partners. They perceived themselves as industry representatives, “defending” the needs and requirements of the industry partners vis-à-vis their academic colleagues: “Because I have worked in industry, I understand their needs and I speak their language” (EL1u). The presence of individuals with industry experience was atypical for universities, yet enabled the hybrid spaces to better bridge the boundary between the universities’ mainstream academic activities and their external industrial constituents.

At the same time, the centers primarily employed individuals on an academic career track including junior faculty and researchers, and PhD students. The center directors were also generally academics but more senior. In fact, most were full professors, many of whom had experience working in industry, and hence an understanding of the outputs sought by firms and the normal processes and routines deployed to achieve them. The directors’ profiles (Table 3) demonstrate that these individuals had experience that spanned the worlds of academia and industry as indicated by the unusual combination of citations of their academic work and their industrial experience and patenting record.

The overall result was that the centers—or, from our perspective, distinct organizational spaces—existed within the university with the explicit purpose of pursuing industry-oriented research. These spaces existed administratively in the sense that they had their own administrative rules and practices; they existed physically in that they often had demarcated physical areas devoted to their activities including desks, laboratory space, computers, and storage cabinets; they were cognitive spaces in the sense that they had their own identity recognized by center members and nonmembers; and they were social spaces in the sense that they provided a context for intense social interaction among center members and outwards to industry partners. Furthermore, from an institutional perspective they were hybrid spaces in the sense that they combined aspects of the dominant and minority logics that enabled the organization within which they were constituted to engage with external organizations

that adhered to a different logic from the one governing academia. For instance, as expressed in its documentation, the AUTO center aspired to perform scientific discovery *and* apply it to industrially relevant research on powertrains. While all centers were staffed with academic researchers or doctoral students, they generally pursued objectives that reflected both academic and industrial goals. Below, we investigate the forms of work performed by center members to sustain these hybrid spaces.

Leveraging the Dominant Logic

Universities used the centers to engage with for-profit firms who operated according to a commercial logic. In other words, in creating these centers, universities committed to producing outputs valued by the standards of the commercial logic. At the same time, the centers were not designed to perform activities that were completely different from the universities’ mainstream academic research. On the contrary, they conducted industrially valuable research by largely following academic practices and procedures. To be successful, the centers needed to deploy the academic logic to produce outcomes that were valuable when judged according to a commercial logic, but that the industry partners found difficult to do for themselves. From our analysis, this was the result of intensive work by center actors of “leveraging” the academic logic so it could be promoted to external industry constituents. Leveraging the academic logic was underpinned by two constituent forms of work.

Distilling Elements of the Dominant Logic. Our academic informants frequently maintained that from their viewpoint, working with industry partners was only feasible if the resultant activities were aligned with their academic work. As one professor stated: “If we turn ourselves into a testing house [providing routine research to companies], the moment tests are no longer needed we’re done. All our knowledge, skills, tool sets, even equipment, is geared towards a purpose, which is an academic purpose... I have never made concessions that take me away from the academic game which is publishing [when collaborating with industry]” (A5u).

Asked to consider what he would have done if there were no academic benefit from a proposed center, a professor said: “I would have said no because that hampers you [as an academic]. There is no point in making a rod for your own back” (D1u). Similarly, another researcher mentioned that if work in the center could not be organized to support academic freedom and curiosity-driven research, then you should “just abandon [the idea of engaging with industry] altogether” (E5u). These statements make it clear that university researchers—and by implication their universities—were unwilling to create centers if the latter did not allow the researchers to continue operating according

Table 3. Profiles of Center Directors

| Director of | Scopus citations | Worked in industry (years) | Patents |
|-------------|------------------|----------------------------|---------|
| AUTO | 888 | 8 | Yes |
| BIO | 2,235 | 0 | Yes |
| DRUGS | 6,008 | 0 | Yes |
| EARTH | 1,435 | 20 | Yes |
| ELEC | 18 | 25 | Yes |
| MACHINE | 670 | 8 | Yes |
| MOTOR | 370 | 15 | Yes |
| PHYSICS | 2,591 | 10 | Yes |

to some nonnegotiable aspects of the academic logic. In turn, within the centers, the academic decision-makers sought to ensure that the center activities did not detract from pursuing certain academic goals, such as the requirement to publish. So, central to the work of leveraging is the negotiation and determination of the core elements of the dominant logic that will be distilled into the hybrid space and to specify and communicate what were considered crucial “red lines” to members, other organizational actors, and external stakeholders.

Exploiting the Dominant Logic for Minority Actor Benefits.

We observed that, beyond determining the core elements of the academic logic, participants carefully selected specific areas of work to be carried out inside the centers that conformed to good academic practice, yet were of interest to the industry partners. The challenge for center leaders was not just to import core elements of the dominant logic into the hybrid space but also to find ways of making activity carried out according to these elements interesting and valuable to industry partners operating according to the minority logic.

This aspect of leveraging can be seen in how the outputs of the work were to be used. In most cases, center participants searched for areas where industry partners were able to concede the ability to openly disseminate research results without significantly compromising the industrial value of the outputs achieved from collaboration. In some cases, the pursuit of academically valuable outputs (e.g., publications) was even actively pursued and encouraged by industry participants as this facilitated industrial goals. The practices of the academic logic were exploited for industry purposes.

A research program conducted at EARTH on carbon-capture technologies illustrates this process. The industry partner did not view this research area as commercially sensitive, and hence the company posed few restrictions on their academic partners with respect to publishing. A company executive explained: “In the CO₂ storage domain, we don’t have a strict intellectual property issue, because we want to work with others, learn with others and share. Therefore, we have the luxury of saying well, yes, of course, you can publish this stuff and I want you to use the data. For us, this is a way of accelerating our own research, as it allows us to access data or knowledge which others [academics] have” (E7i).

As this quote illustrates, in this case the company was not looking for a direct contribution of the center activities to its innovation projects, as would be suggested by the commercial logic. Rather, the center activities allowed the company to participate in the open academic debate in this area and shape an emerging field of research, resulting in subsequent industrial benefits such as the creation of specialized human capital. These benefits were intrinsically connected to

(and exploited) the fact that academic communities operated differently from industrial groups.

The above observations illustrate how industry partners were offered an opportunity to benefit from work adhering to the academic logic, meaning results were openly published and travelled more rapidly between the open boundaries of research groups, compared with industry. Using the prototypically academic practice of open publishing was not only the outcome of a compromise, but in itself helped industry participants pursue and achieve industrially relevant goals. Creating ways of using elements of the academic logic to create benefits for the industry partners was the foundation of a successful center; when academics and industry partners were unable to do this, the result was either that the center did not materialize or else it failed when it became clear that either the center was not sufficiently connected to the academic logic or that insufficient benefits would be forthcoming for the industry partner.

Another example of exploiting the dominant logic related to the fact that, in academia, projects are oriented toward basic science and hence inherently more uncertain, with outcomes less tightly defined. Industry partners explained they would not work with a university on mainstream, more applied projects that were crucial to their success. Rather, they chose projects that were speculative and tentative and for which it was difficult to raise internal funds. This type of project could be entrusted to a PhD student who was able to spend several years working on the problem and who would in addition pursue an academic agenda as a parallel work stream. As one industry informant stated: “Yes, these [university] projects take a long time, but the flipside is that we could never get these kinds of projects agreed internally. They allow us to learn about something that we don’t have the time to do right there and then. And then they would be carried out by these two PhD students, and we would be like: wow! This kind of work we would never think of internally” (A8i).

As this statement illustrates, the industry partners not only accepted the academic style of working as a necessary compromise, but explicitly valued the fact that the project was carried out in an academic environment and with academic approaches. The promotion of the academic logic on the part of university researchers therefore represented a necessary condition for the engagement to take place. This inference is further strengthened by examples of when collaboration would not work, as provided by our informants. One industry executive stated that industry partners would not participate in a center where research was aimed at applied problem solving and linked to product development: “Anything really serious we would do in-house. If we need to know the answer by tomorrow, we are not going to farm it out to a university. There is no

advantage working with a university if it does not play to their strengths” (MA3i).

Overall, the above illustrates how the center participants worked to leverage the dominant logic toward external constituents. Regarding the effects of this activity, on the one hand they determined what core elements of dominant logic were to be affirmed within the hybrid space and, on the other, how activities following the dominant logic could be exploited to achieve outcomes valued by participants adhering to the minority logic. The latter was seen as particularly attractive by minority participants and constituted a condition of their engagement.

Hybridizing the Dominant Logic

Distilling elements of the academic logic and exploiting them to achieve valuable outcomes for industry partners was only one kind of work carried out by the centers as they sought to reach out to industry partners. The second form of work we observed focused on ensuring that the practices and routines used in carrying out activities in the centers were acceptable to industry partners adhering to the minority logic. Our findings show how the centers ensured that their industry partner’s basic expectations were met through two kinds of activity.

Endorsing Minority Logic Constraints. Despite maintaining the priority of pursuing academic objectives, academic center participants frequently expressed a clear understanding of, and sympathy for, industry constraints. They demonstrated pragmatic openness toward the commercial logic in various respects. As one professor said regarding the need to adjust the style of his research: “Industry sometimes insist on the slider between the more fundamental generic stuff and the more practical, applicable results going a little bit too far the [practical] way. But we can work around that. And you have to accept that when they’re putting a double-digit million amount into the pot; they call the shots” (E3u).

Other informants commented that industry performance management practices clashed with the unpredictable nature of academic research and took little consideration of academic commitments such as teaching and conference travel, yet accepted it as a “necessary evil” (EL6u). Equally, academics accepted that industry would often operate under the imperative to keep research results secret: “I believe that our [partner] companies have the right to keep that confidentiality in certain areas, . . . and we cannot move forward on valid research in these areas without accepting these constraints” (A5u).

Endorsing minority logic constraints means that center actors eschewed dogmatic adherence to the dominant logic and accepted minority logic constraints as necessary within the confines of the hybrid space. This effectively loosened the attachment of academic protagonists to “their” logic, and prepared the ground

for an important activity: the actual adaptation of academic practices.

Adjusting Dominant Logic Practices. Even though projects were not generally intended to focus on the production of intellectual property for the sole benefit of the industry partner, center members made concessions with respect to the desire of industry partners to maintain confidentiality. While this did not mean that the academic practice of open publishing was foregone entirely, restrictions were put in place intended to safeguard the industrial value of research outcomes.

As one professor stated about the companies that were funding his center, “car companies are very protective of any information relating to specific engines they are developing” (M9u), making collaboration difficult if not impossible without some degree of commercial protection. This statement also suggests that the adjustment of the academic practice of openness was necessary for a center to be viable. Commonly, centers required researchers to clear academic papers with the industry partners before they could be submitted to academic journals, sometimes resulting in a delay in the dissemination of results. Senior academics tended to preempt industry challenges by leaving sensitive material out of their publications, as a center manager explained: “We try to remove that issue beforehand; we identify how we could get into confidentiality issues and then stay away from that” (E1u).

Still, despite trying to avoid this problem, professors were asked by companies “to, let’s say, leave out a few details” (E3u). Alternatively, researchers were asked to delay publication so an industry partner could take advantage of temporary technology leadership (MA1u). Some centers also put in place specific restrictions with respect to open publications in order to safeguard commercialization opportunities; that is, they imposed publication delays to allow for patent application.

The center projects differed also from conventional, publicly funded projects as different monitoring mechanisms were put in place. Industry partners, attuned to the common industry practice of formal project management, insisted on progress reports presented at quarterly meetings. As one informant explained, “academics regarded this practice as unusual” (EL5u) as it differed from the lighter reporting requirements for publicly funded grants. A professor recalled that he “felt the heat from [partner firm]” (E3u) when one project had not gone to plan.

Another way in which centers challenged academic conventions related to how the research was carried out. Industry partners at times encouraged the academic researchers to conduct experiments in a way that prioritized their applicability to real settings, while academics preferred more idealized experiments that allowed for better isolation of causal factors and hence

rendered results more easily publishable. As an earth science professor explained: “Industry wants experiments to be carried out on actual crude oils but academically using clean off-the-shelf hydrocarbons would be better because crude oils are fiendishly difficult to characterize and therefore the results are more difficult to publish” (E4u).

Academic projects were adjusted not only to make them more applicable to real settings but also, as one respondent stated, “a bit less [academically] ambitious but with more emphasis on equipment, or redundancy of experiments. Where things really matter, we wanted more confidence that the experiments had a broader basis. So more checks rather than more results” (E6u).

We can draw three insights from our study about the work performed to adjust the dominant logic in our hybrid spaces. First, the adjustments we observed ensured that minority logic objectives were taken into account when activity was carried out. Second, the adjustments were incremental rather than radical; the pure dominant logic practices were adapted toward the principles of the minority logic. This occurred with respect to all aspects of research work (Table 1): the pursuit of basic science was adjusted to allow for more applied projects, professors and researchers conceded some autonomy by taking into account industry objectives and subordinating themselves to industrial R&D management, and open publication was delayed and limited to protect commercial exploitation. These adjustments amounted to hybridization as the outcome where practices—while not representing an ideal conformance to each parties’ logics—were seen as acceptable to both. Third, hybridization occurred locally within the hybrid spaces. The applicability of the hybrid practices was confined to research projects pursued within the centers as the hybridization was a direct, and necessary, consequence of hybridizing the academic and commercial logics in order to maintain their engagement over time.

The counterexamples we obtained during our interviews further support the above findings. As one industry partner put it: “If we [in the center] only worked on things that would be publishable or are academically glamorous or driven by conference calls for proposals, that would be counterproductive for us” (E4i). This statement suggests that the urge among academic staff to pursue purely curiosity-driven research needed to be tempered for a center to be viable. Additionally, a university research manager we interviewed described the case of a center that was evaluated as unsatisfactory by the industry partner and subsequently renegotiated at a much lower level of funding: “The corporate partner was unhappy about the fact that the research being proposed in the center was too removed from anything that resembled practical value” (F1u). In this case, the failure to adjust

the academic practice of curiosity-driven research so that commercial considerations were taken into account was seen as so problematic by the industry partner that they questioned the collaboration (F2u, F3u). This supports the conjecture that hybridization—ensuring minority logic objectives are supported in addition to dominant logic objectives—is a necessary condition for a hybrid space to be built and maintained over time.

Bolstering the Dominant Logic

In the centers we studied, hybridization helped safeguard the pursuit of industrially valued outputs, yet it also presented challenges. In MACHINE, one researcher left because confidentiality requirements had imposed too many restrictions on her ability to publish her work in a timely manner. In several other instances, the objectives of projects veered too far toward commercial applicability from the point of view of the academic researchers. As one junior researcher in MOTOR complained: “My biggest issue is that the project is initiated by industry. I have to spend too much time on building a computational model of an engine but this is not an innovative activity because it has been done before. Therefore, this part of my work does not lend itself to publication, simply because there is no academic novelty in it” (M5u).

This quote illustrates how the functioning of centers is threatened when the hybridization of the dominant logic moves too far toward the minority logic. In our study, because of the involvement of industry partners in the governance of the hybrid space, there was a constant possibility that the commercial logic could exert an overly strong influence on the hybrid space. We found two forms of work were carried out to avoid such drifting. We found that center actors maintained the centers’ adherence to the distilled elements of the academic logic in two ways, shielding and anchoring, which we will describe below.

Shielding of Dominant Logic Representatives. In the centers we studied, center directors and other senior academics took steps to shield more junior academic researchers from the excessive influence of the commercial logic. We define shielding as work done to protect members of the hybrid space from the adverse consequences of hybridization. The PHYSICS director described the shielding process as “defend[ing] the organization from being cloned into acting in a way that it wouldn’t do otherwise; this means keep the context open and do good science” (P3u). Another academic illustrated the motivation for shielding, informed by a negative experience: “... there was just no structure to protect the scientists from what I’d call Gordon Gekkos in the city and we would have the very alarming situation where we would have these city types actually turning up in the laboratories saying,

‘we’ve got a slot on the nine o’clock news, what have you got for me?’ . . . There need to be structures in place to actually keep that distance, so the financial people can’t just come in and start bullying the academics” (D2u).

Shielding was primarily accomplished by center directors and other senior academic members by mediating the researchers’ relationship with their center’s industry partners. As a result, the junior academic researchers worked in relative separation from the industry partners and received their instructions and evaluation from senior center managers.

An example from ENERGY illustrates how this mediation enabled shielding from commercially informed intellectual property restrictions. In one of the ENERGY projects, the academic team agreed to work on geological surface formations while a corresponding team within the partner firm worked “subsurface.” As a professor explained: “Because working with subsurface data would kick off a lot of intellectual property issues—these data belong to the mining companies—[the seniors in the center] decided we needed to work with surface data because our people are really desperate for publishing” (E11u). By enabling the researchers to work with nonconfidential data, the intellectual property concerns of the industry partner were alleviated and the publishing needs of the academic staff could be fulfilled.

The seniors also shielded junior academics from performance management practices conducted to satisfy the commercial logic. While center activities had to be reported back at least quarterly to the sponsors, in most cases the center management carried as much of the burden as possible. As a senior academic in PHYSICS explained, “the students and post-docs should focus on making progress with their science rather than the paperwork” (P5u). When prompted by us, junior researchers often understood their role in the center entirely in academic terms, without referring to the goals of the center or the sponsor. As a result, researchers’ work often differed little from their equivalents’ work in a typical academic department despite their often significant contribution to the goals and interests of the industry partners.

Anchoring the Hybrid Space. We noted above that the center directors mediated the relationship between the academic researchers in the center and the industry partners, supported by the industry-oriented center staff. This raises the question of what enabled the directors and other senior center members to credibly shield the academic researchers from excessive industrial exposure?

Our findings suggest that they accomplished this by virtue of their dual roles as both center members and faculty members of the universities in which the centers were embedded. Crucially, industry engagement was often only part of the portfolio of the center directors’

activities. They were usually scientists with a considerable academic track record, and combined their industry engagement with government-funded academic research. They considered the benefits and trade-offs associated with the commercial logic, not for the isolated instance of the center activity but for their research portfolio as a whole. As one professor recounted: “I did an applied, confidential project with a firm that didn’t lead to any publications; this was a problem for the post-doc who worked on it but it helped me build a relationship (with the firm) and led to a follow-on, more academic project” (E10u). This instance illustrates how the directors considered not only the direct outputs of industry-oriented projects but also indirect benefits across a whole portfolio of activities.

Because the center directors—and other senior members of the centers—held several roles within the larger organization, they were able to ensure that the centers would achieve their academic objectives. They had access to wider organizational resources, giving them some flexibility in terms of where in their portfolio an activity was ultimately located. If an activity proposed was judged as “too academic” by industry partners, it was at times moved out of the center so as to shield researchers from having to modify the activity to satisfy industrial demands. As a professor explained: “Sometimes we just do it [a project] outside of the center; if the firms can’t be convinced, we’ll just do it outside of the center, so that’s a nice relief valve for us” (A10u).

It is worth noting that there was a mutually reinforcing relationship between shielding and anchoring. If leading a university–industry center only occupies a part of a professor’s role while otherwise they stay firmly rooted in their academic research, they will have more credibility and competence to perform the shielding required to protect the academic members of the center and support the continual reproduction of the hybrid space. As a function of their position, they are firmly committed to the academic logic that lies at the center of their professional identity, as well as their organizational role as senior academics, and hence they were both motivated and had the capability to shield academic center members. Conversely, as they ensured that academically valuable outputs were produced in the centers, the center directors reinforced and strengthened their overall academic standing within the wider university. By engaging with industry via the activities pursued in the center, the center leaders worked to achieve ultimately academic objectives. Both mechanisms interacted to reinforce the ongoing operational ability of the centers to function according to the academic logic.

Overall, bolstering had the effect that the centers were able to ensure that academic objectives were being pursued despite the hybridization of majority and minority elements. While hybridization provided the option for industry objectives to be pursued,

bolstering meant that the commercial logic did not always take precedence or was at least enacted in conjunction with academic objectives.

Our findings are supported by informant statements providing counterexamples indicating that the functioning of centers would be compromised in the absence of bolstering. A university manager stated: “Centers often suffer from issues relating to the support for the academic career of post-doctoral researchers. We can’t have a situation where post-docs are used for consulting projects, and centers like that won’t work.” In the MOTOR center, a scientific review was conducted by a university-appointed committee, and according to one informant the committee “criticized us for not publishing enough (. . .) maybe it’s because of the tight coupling to industry” (M1u). In this case, the temporary failure to bolster the academic logic had led to adverse consequences from the viewpoint of the mainstream organization. Similarly, in the case of the center mentioned above that had a large portion of its funding withdrawn, the involved academic researchers felt that the industry sponsor was encroaching disproportionately into their territory, notably by booking a research facility for client visits and thus making it unavailable for research purposes (F2u, F3u). This instance illustrates that the failure to shield the academic activity in the center—in other words, the failure to bolster the dominant logic—led to disaffection and loss of interest that affected its successful operation. This was especially damaging as centers are based on the premise that academic practices and approaches would be brought to bear on their activities, a promise that cannot be fulfilled without commitment on the part of the academic constituency.

A Model of Hybrid Space Creation and Management

Building on our findings, we develop a generalized model of the work done by organizational actors as they create and maintain hybrid spaces to engage with a minority logic (see Figure 2). In the figure, we use the term “mainstream organization” to refer to the organization adhering to a dominant logic within which the hybrid space is created and “external constituents” for the minority logic audience that it engages. Hybrid spaces are the organizational sub-units in which both the dominant and the minority logic apply.

Leveraging the Dominant Logic

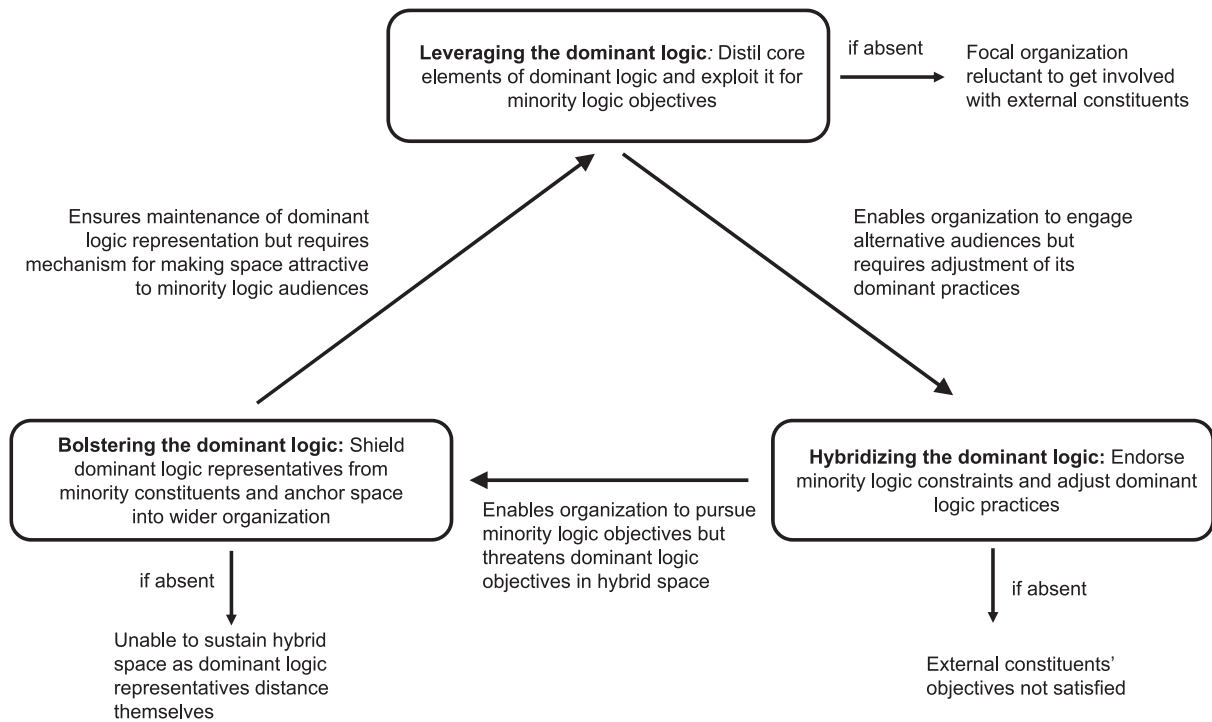
The first step in creating a hybrid space is for an actor to identify an opportunity to promote the organization’s mainstream activities—coherent with its dominant logic—to generate outputs valued by an external constituency adhering to a different logic. On the one hand, actors have to distill the core elements of the logic

by establishing what they consider the practices and objectives that underpin the functioning of the mainstream organization. On the other, they have to identify areas of activity where operating according to the dominant logic generates actual benefits for an external constituency adhering to a minority logic; otherwise, the external constituency will not engage. Such leveraging of the dominant logic to an external constituency allows for an expansion of dominant logic practices as they are applied to new areas of activity – in our case, the use of academic practices is expanded to conducting industrially oriented research. The precise way in which this expansion is achieved is borne out by our data: actors deploy the dominant logic to achieve ends that are valued by the minority logic. This is possible because logics can influence organizations on an ideological level, indicating the ultimate ends to be pursued, or on the functional level, indicating possible means by which the ends could be pursued (Pache and Santos 2010). In our setting, actors promoted the practices of open dissemination of findings and curiosity-driven research in order to achieve ends conforming with commercial R&D.

The work of leveraging a dominant logic toward an external constituency contrasts with the way in which the hybridization of logics is initiated in blended hybrids. In the case of *de novo* hybrid organizations, hybridization is prompted by the attempt to combine logics to create capabilities that allow the pursuit of new organizational mandates (Battilana and Dorado 2010, Powell and Sandholtz 2012), while in the case of established organizations, it is often a function of field-wide pressures exerted by external stakeholders (D’Aunno et al. 1991, Reay and Hinings 2009). By contrast, as our findings suggest, organizations create hybrid spaces in an attempt to expand the applicability of their dominant logic practices into new fields of activity. This allows them to engage with new audiences (subscribing to different logics) without having to deviate significantly from its existing repertoire of practices on the level of the organization as whole. Because this new type of deployment of core practices remains limited to a confined compartment of the organization (the hybrid space), they mitigate the risk of alienating their existing mainstream audience.

Hybridizing the Dominant Logic

An unaltered deployment of the dominant logic is unlikely to satisfy the demands of minority logic constituents. In fact, it is in solving this problem that the bounded nature of hybrid spaces becomes relevant, as the adjustment of the logic to accommodate key demands of the minority logic constituency can be limited to this space while the remainder of the organization remains unaffected. Minority logic engagement is therefore regarded as a supplementary means of acquiring resources, rather than a fully-fledged realignment of

Figure 2. Model of Establishing and Maintaining Hybrid Spaces

the organization's identity, dominant practices and objectives.

Hybridization is achieved by creatively modifying elements of the dominant logic that are in conflict with important minority logic objectives. In our case, academic publishing was moderately curtailed by delaying and editing publications, and pure basic research as a goal was innovatively adjusted to have more direct relevance for technological application. Hybridization was previously characterized as a process whereby goals from incompatible logics are integrated as complementary (York et al. 2016). However, while the process we observed also involved facilitating multiple goals, the process of York et al. (2016) referred to the hybridization of logics—resulting in a new logic—as a whole while the process we characterize refers to the hybridization of practices. In our study, the two logics remained distinct and no new logic was produced. The essence of hybridization lies in adjusting those aspects of dominant logic practices that directly impeded minority logic objectives, while still maintaining the suitability of the practices for achieving dominant logic objectives.

This type of hybridization is different from the selective coupling observed by Pache and Santos (2013), which involves the combination of intact practices from each of the involved logics; in their account, this was done to preserve legitimacy with external stakeholders. This latter need applies less to hybrid spaces due to their limited extension; they do not, in general, pose a legitimacy problem for the organization. Hybridizing

also differs from “bridging” as characterized by Smets et al. (2015, p. 961). They define bridging as consisting of responding to situation-specific demands by “temporarily combining logics to exploit complementarities,” as opposed to modifying a standing practice so they can be deployed for furthering minority objectives. The Smets et al. (2015) framework also assumes relative symmetry between the logics present while our framework is designed to capture an asymmetric setting where an organization rooted in a dominant logic introduces minority logics into relatively limited and well-bounded parts of the organization.

In hybrid spaces, the adjustment of practices is accomplished as part of leveraging the dominant logic to attract external constituents. In that prior step, participants had already set down their “red lines,” and explored the areas of activities to which the dominant logic practices should be expanded. This is in contrast with what previous authors have observed in blended hybrids. Notably, the authors have found that hybrid organizations need spaces of negotiation (Battilana et al. 2014) and experimental spaces for microlevel collaboration (Reay and Hinings 2009) in order to resolve the trade-offs faced by combining different logics. Relatedly, Ramus et al. (2017) have found that formalization is used by actors for a similar purpose, that is identifying which elements are core to their practices and which can be compromised. In hybrid spaces, as we have found, these mutual adjustment mechanisms are not needed because the boundaries between what

is permissible and what is not have already been set while leveraging the dominant logic. Once this is accomplished, the academic practices are modified so as not to impede industry objectives while only posing noncritical obstacles to achieving academic objectives.

Bolstering the Dominant Logic

The very process of leveraging the dominant logic implies that the hybrid space, with its hybridized practices, is to remain an integral part of the mainstream organization, rather than becoming a decoupled unit. For instance, exploiting the academic logic for industry objectives would be difficult to achieve if the hybrid space was homogeneously populated by individuals adhering to the commercial logic, as might be the case in a fully compartmentalized organization. Therefore, fostering the representation of the dominant logic within the hybrid space and upholding the dominant logic practices are important preconditions for the continued maintenance of the hybrid space over time.

For this to happen, the hybrid space needs to remain tightly integrated with the mainstream organization, a process that we call bolstering the dominant logic. Bolstering is accomplished by a combination of shielding and anchoring. This means that dominant logic practices and those who enact them in the hybrid space are protected against an excessive influence by the minority logic which is in turn facilitated by the building of durable personnel overlaps between the hybrid space and the mainstream organization, particularly on the senior level. In the absence of bolstering, those adhering to the dominant logic in the hybrid space would likely resist and curtail their involvement. This resonates with Besharov's (2014) account of pluralist managers in hybrid organizations who view conflicting values as mutually reinforcing and support social integration in the organization by facilitating other members' identification with the organization. The leaders of the hybrid spaces we observed in our study were equally pluralist as they built hybrid spaces with hybridized practices and mixed constituencies. Yet the process of bolstering the dominant logic is absent in hybrid organizations, and hence is specific to hybrid spaces. Hybrid organizations, because logics are blended throughout the organization, lack discontinuities in their logics combination while hybrid spaces are, in this respect, discontinuous with regard to the mainstream organization. They have an intraorganizational boundary that creates a requirement to maintain the integration of the hybrid space with the mainstream organization; this is accomplished by bolstering the dominant logic inside the hybrid space as it is weakened by interaction with the minority logic over time.

Activity across this intraorganizational boundary also underpins the difference between our concept of bolstering and the concept of demarcating as identified

by Smets et al. (2015). While demarcating refers to activities that "protect against inadvertent logic blending or slippage by reasserting both the underpinning logics and referent audiences of bridged work practices" (Smets et al. 2015, p. 961), "bolstering" refers to activities that defend an organization's dominant logic within a hybrid space not by reasserting both present logics but by creating a linking mechanism between the mainstream organization and the hybrid space.

A Novel View of Structural Hybrids. Having examined how organizational actors manage institutional complexity using hybrid spaces within the context of a larger organization, we are able to juxtapose our findings with the sorts of structural solutions proposed by previous work (see Table 4). The main insight emerging from our comparison is that organizations that contain hybrid spaces are a form of structural hybrid, but with different characteristics from the stylized descriptions in previous theoretical discussions (Kraatz and Block 2008, Greenwood et al. 2011). Below, we will compare structural hybrids as they emerged in our study with blended hybrids and the "stylized hybrids" discussed in theoretical work on structural hybrids.

Above all, while the dominant and minority logics were blended within the hybrid spaces, this blending does not occur throughout the whole organization. Hybrid spaces represent a means to manage and exploit institutional complexity within a limited part of the organization, rather than extending the solution to the whole organization as is the case in blended structural hybrids. Furthermore, the specific type of logics combination that we observed—whereby the dominant logic practices are adjusted to accommodate a minority logic—contrasts with the purity of distinct compartments each following different logics as proposed in the literature discussing stylized structural hybrids.

The above differences have implications for structural hybrids' institutional identity (Glynn 2008): while blended hybrids will be recognized in their institutional environment as a distinct institutional type, and stylized structural hybrids as explicitly dual (or multiple) types, being a structural hybrid as captured in our study will have fewer consequences for an organization's institutional identity as its hybrid spaces will still feature their dominant logic. In our setting, establishing university–industry centers did not detract from universities' institutional identity as an academic organization (Schildt and Perkmann 2017). In this way, hybrid spaces are of real value as a solution to engaging with minority logics as they allow an organization to address minority audiences and exploit complementarities between logics without risking misrecognition by its mainstream audiences.

The major challenges to be addressed by hybrid spaces are to manage the locally incurred tensions

Table 4. Different Types of Hybridization

| | Blended hybrid (hybrid organization) | Stylized structural hybrid (compartmentalization) | Actual structural hybrid (our study) |
|--------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Mode of logics combination | Integration of logics across the organization | Creation of loosely coupled units with each adhering to a different logic | Integration of logics within bounded space of organization |
| Degree of integration of logics | High and across whole organization | Low | High within space but low across whole organization |
| Institutional identity | Hybrid organizational type | Structurally differentiated | Limited effect on institutional identity |
| Opportunities | Specialist, cross-sectoral capabilities; exploit complementarities between logics | Resource acquisition from multiple stakeholders; decoupling from specific institutional demands | Diversification toward minority stakeholders; exploit complementarities between logics |
| Main challenge | External legitimacy; manage local tensions between logics | Manage integration between units to achieve organizational coherence | Manage local tensions between logics; manage integration with mainstream organization |
| Practices used to address challenges | Selective coupling (Pache and Santos 2013); spaces of negotiation (Battilana et al. 2014); microlevel collaboration (Reay and Hinings 2009); means-focused identity building (Battilana and Dorado 2010); formalization (Ramus et al. 2017); and pluralistic managers (Besharov 2014) | Practices aimed at achieving integration (Greenwood et al. 2011); loose coupling (Kraatz and Block 2008); and splitting (Jarzabkowski et al. 2013a). Empirical research is scarce | Leveraging the dominant logic for the benefit of external stakeholders; hybridizing logics (locally within space); bolstering (aimed at maintaining dominant logic) |

within the hybrid spaces and also to manage the interface between the hybrid space and the mainstream organization. Therefore, they share challenges with both blended hybrids and structural hybrids. However, unlike blended hybrids, they are unlikely to be affected by external legitimacy challenges as they do not present a separate institutional identity. This has implications for the type of practices that are used in each type for addressing the challenges of institutional complexity and exploiting related opportunities. In blended hybrids, many practices identified by extant literature are designed to provide clarification about the principles of each logic and enable participants to proceed through mindful and reflective compromises (Battilana et al. 2014, Besharov 2014, Ramus et al. 2017). Hybrid spaces, by contrast, are established with a clearly defined dominant logic from the outset. This reduces the need for ad hoc negotiation yet increases the need to make the hybrid space palatable to external minority logics stakeholders, ensuring that practices in the space do not drift toward the minority logic and therefore continue to be compatible with the mainstream organization. Blended hybrids are also exposed to this risk of mission drift as the balance of the logics involved may shift too much in one or the other direction; previous work has argued that this risk may be mitigated by “tabula rasa” hiring, that is, populating the organization with individuals who are not strongly wedded to any of the primary logics governing the organization and socializing them by creating a new organizational identity (Battilana and Dorado 2010). By

contrast, in structural hybrids, the manipulation of the organization’s preexisting identity likely will be impractical. Moreover, actors will have a preference for hiring individuals rooted in the dominant logic because this is a precondition for being able to leverage the dominant logic. For this reason, the approach for avoiding drift set out for hybrid organization by Battilana and Dorado (2010) will be less suitable for structural hybrids; here, bolstering as we described would appear a more effective mechanism.

Conclusion

Our study of university–industry research centers examined the establishment and management of hybrid spaces, that is organizational units or compartments that are characterized by a logic different from the dominant logic of the organization. We found three types of work performed to create and maintain these spaces: (a) leveraging, where selected dominant logic practices are deployed to achieve minority logic objectives; (b) hybridizing, where the dominant logic practices inside the space are adjusted to allow for compatibility with the minority logic; and (c) bolstering, where the space is shielded against excessive minority logic influence and anchored back into the organization.

Contrasting our results with previous depictions of structural hybrids as being composed of compartments characterized by distinct, single logics, we find that our hybrid spaces are very different from these. We argue that that this result can likely be extended to many

instances of such compartments that have previously been discussed only theoretically rather than being subject to empirical scrutiny. We further show that organizations with hybrid spaces (in our parlance, “actual structural hybrids”; see Table 4) differ from blended hybrids (e.g., Battilana and Dorado 2010) as the blending of logics remains limited to these spaces. For this reason, they are less likely to suffer external legitimacy problems afflicting hybrid organizations. They also have less need for conciliatory mechanisms (spaces of negotiation, formalization) as they have a clearly defined dominant logic determined by the parent organization. However, our structural hybrids have to overcome specific integration problems—using the types of work as identified in our study—not arising in blended hybrids. Overall, our study contributes to the literature on structural solutions to institutional complexity, and is a novel addition to work on the mechanisms used in both blended and structural hybrids.

While we are aware that our cases are all from universities, we believe the notion of hybrid spaces is general enough to apply to hybridization processes in other contexts. For instance, art organizations like museums or orchestras may deploy hybrid spaces where art and commerce come together and where artists engage with external stakeholders to develop market-oriented propositions (Glynn and Lounsbury 2005, Durand and Jourdan 2012, Shymko and Roulet 2017). Another example is commercially oriented units of public sector organizations where civil servants work to provide services to external or internal customers at market rates (Jancsary et al. 2017). Firms’ outreach to local communities (Lee and Lounsbury 2015) also can be organized by building specialized units where company officials have to integrate community considerations into their commercial practices. Similarly, some social enterprises create hybrid spaces within a traditional charity form in order to engage in for-profit activities that, in turn, generate resources for their social mission (Santos et al. 2015).

The creation of hybrid spaces is likely subject to certain boundary conditions. Specifically, hybrid spaces are presumably ineffective when organizations are under strong coercive pressure to acquiesce to an alternate logic, as responding to the pressure would likely require a more extensive integration of new practices and procedures into the whole fabric of the organization, that is, blended hybridization (D’Aunno et al. 1991; Reay and Hinings 2005, 2009; Raaijmakers et al. 2015). However, as long as the pressure to conform is not coercive (DiMaggio and Powell 1991), organizations always have some discretion over whether to acquiesce, and even more so on how, to what degree, and when (Oliver 1991, Pache and Santos 2010, Besharov and Smith 2014). Acquiescence will most likely happen when organizations are resource

dependent (Pfeffer and Salancik 1978) with respect to a minority logic audience. In this case, an organization may perceive it as strategically advantageous to address minority logic stakeholders to increase its overall resource base (Durand and Jourdan 2012), but will have some latitude in terms of how to accomplish this.

For example, in the university sector that we studied, policy makers, business interests and some intra-academic constituencies have been campaigning for some time for higher education organizations to conform more to the commercial logic. However, each university has some discretion over what, if any, structures to put in place in response. Similarly, symphony orchestras have made varying choices with respect to how far they embraced commercialization (Glynn and Lounsbury 2005). Overall, the above arguments suggest that when faced with relative discretion over whether to engage with a minority logic, hybrid spaces represent a solution that captures potential benefits from institutional complexity yet avoids disruption and upheaval affecting the organization as a whole.

Partly related to the above, a second boundary condition for the applicability of our theory is the degree to which the use of hybrid spaces is known and accepted in the wider field in which a focal organization belongs. In the academic sector, many universities have long reached out to industry, and hence the building of specialized organizational units responding to this objective is institutionally accepted and legitimate. In such a context, the undertaking of building and managing a hybrid space will not, in principle, be contested by organizations; however, this will not remove the challenge of institutional complexity within and around these spaces, and hence our theory remains relevant. One may speculate that projects aimed at building hybrid spaces around entirely new logics combinations may encounter a whole set of additional challenges not present in our context.

Previous work has examined the role of special spaces within organizations that facilitate organizational change (Kellogg 2009, Howard-Grenville et al. 2011), and the question arises how our work relates to this work. These spaces allow heterogeneous groups to convene and incite change against prevailing forces of stability. The hybrid spaces that we observed share with these “change” spaces the feature that they enable heterogeneous groups—each adhering to different logics—to interact productively. Kellogg (2009), for instance, found that for this purpose the spaces in her study were isolated, that is, separated from work activity. But she also found that the spaces enabled relational capacity, that is, the ability to build bridges with the existing organization which in turn enables the efficacy of the change project. Interestingly, this pattern is broadly equivalent in the case of hybrid spaces that are both distinct from the larger organization but also

anchored back to it. However, hybrid spaces serve a different purpose; instead of facilitating change, they provide a context for the management of institutional complexity. They are also different in that they are not temporarily established during periods of change but are more permanently installed to enable organizations to engage with alternate logics on an ongoing basis. Finally, we find that their “isolation” is not accomplished by separating them from work but rather by leveraging the mainstream practices—they are characterized by the continuing strong presence of the dominant logic—and adjusting them so that different goals are achieved. This distinguishes them from the “change spaces” discussed in the literature that are often both physically and symbolically separate from the mainstream organization.

While we believe our study makes novel and important contributions to institutional theory, it also has limitations. The first relates to generalizability. Future research should explore when and where hybrid spaces function in the same way, and also whether there are particular instances when hybrid spaces do not work at all. For instance, contexts are likely to vary by the degree of compatibility of the logics (Besharov and Smith 2014) or the degree to which cross-logic interactions are institutionalized, which may affect the feasibility of logic leveraging within hybrid spaces.

Second, our study explored in-process cases, which has the advantage of reducing respondent retrospective bias, but is less helpful for drawing sharp distinctions between successful and less successful cases. While we sought to address this challenge by using an instance-based approach to inferring causality, future research should conduct post-hoc studies of hybrid spaces in order to validate those factors that are necessary for these spaces to function as a structural solution to institutional complexity and discard those that are incidental.

An additional aspect worth exploring in future research concerns how hybrid spaces—as a specific structural solution—are related to organizations’ management of institutional complexity more generally. Temporally, for example, hybrid spaces may provide a testing ground for organizations to engage with alternate logics in more encompassing ways, such as by building fully compartmentalized structures or becoming blended hybrids. Potentially, hybrid spaces also may be suitably deployed for decoupling strategies—even though this is not what we found in our study—where organizations ostensibly acquiesce to another logic but avoid substantive engagement (Boxenbaum and Jonsson 2008).

Overall, we have developed the notion of hybrid spaces as a relevant solution to institutional complexity that allows organizations to engage with alternative institutional logics. Hybrid spaces are likely to be particularly effective when organizations have discretion

over their engagement with alternate logics, and when they seek to limit the potentially disruptive effects of institutional complexity to a delimited part of the organization. We hope that our exploration helps both illuminate this important institutional mechanism and encourages further work in this area.

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