

Ubiquity and Legitimacy: Disentangling Diffusion and Institutionalization*

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Diffusion and institutionalization are of prime sociological importance, as both processes unfold at the intersections of relations and structures, as well as persistence and change. Yet they are often confounded, leading to theoretical and methodological biases that hinder the development of generalizable arguments. We look at diffusion and institutionalization distinctively, each as both a process and an outcome in terms of three dimensions: the objects that flow or stick; the subjects who adopt or influence; and the social settings through which an innovation travels. We offer examples to flesh out these dimensions, and formulate testable propositions from our analytic framework that could lead to further theoretical refinement and progress.

INTRODUCTION

One of the fundamental conceptual puzzles in contemporary social science concerns the distinction between diffusion and institutionalization. Many things spread, often like wildfire, without ever becoming institutionalized. The ubiquity of a practice may suggest that it has become widely accepted, but activities that diffuse may never develop a foundation that enables them to persist. In contrast, there are procedures that are institutionalized—upheld by either law or strong beliefs—but not widely used or pursued. Despite these contrasts, most studies of institutionalization have equated the spread of something, such as a management practice or an organizational structure, with an indicator that it has become institutionalized, without examining the character of adoption (Scott 2001; Schneiberg and Clemens 2006). On the other hand, diffusion research has not examined many of the ways in which the degree or form of institutionalization influences the pace or shape of diffusion. As a result, numerous insights in both strands of research are overlooked, prompting a conflation: institutional effects in diffusion are often misinterpreted as institutionalization, and highly institutionalized structures accompanied by practices that fade away are treated as fads or fashions.

Our goal in this article is to resolve the conceptual muddle present in these two literatures and offer fresh insights into their distinctions and connections. Both

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strands of research can benefit from clearer specification of the objects (that spread or stick), subjects (who influence or adopt), and settings (within which each process takes place). We disentangle diffusion and institutionalization to better specify causal processes and provide an analytical basis for case selection, whether successes or failures, fads or meaningful change.

We begin with a brief illustration that highlights critical conceptual differences. We then turn to a more detailed discussion of diffusion and institutionalization, deriving from it testable claims and propositions. We propose a distinction based on reinforcement and contagion for diffusion and reproduction and integration into cultural and cognitive frames for institutionalization. We conclude with an agenda for further research.

DISENTANGLING DIFFUSION AND INSTITUTIONALIZATION

An empirical example helps illustrate the differences we wish to highlight. Consider the proliferation of patenting in university research, which in recent decades has drawn close scrutiny by scholars of science and innovation. A practice once considered anathema for academic scientists and a conflict of interest for public research organizations has become widely accepted and even expected in the U.S. academic enterprise (Colyvas and Powell 2006). This transformation has been accompanied by both formal legislation and the adoption of technology transfer offices (TTOs) within research universities. The likelihood that academic scientists will patent a research finding has increased as well (Stuart and Ding 2006). The evidence thus suggests that commercializing academic research has become highly institutionalized.

Yet an important puzzle emerges in the case of academic patenting. Participation of actual scientists as an overall proportion either of the population or of individual research output is limited. Recent statistics suggest that scientists' patenting ranges from 9 percent to 16 percent of individuals in the field (National Science Board 2004; Stephan et al. 2007). Furthermore, university TTO operations remain modest at best: one-third of TTOs are staffed with three or fewer people, and in financial terms most hardly break even (AUTM 2007). How can an activity that is embraced in principle by so many be practiced by so few? Does the relative scarcity of participation in technology transfer at the individual level indicate that the practice is merely a fad, failed diffusion, or only weakly institutionalized? Can a structure be deeply institutionalized (as claimed in this case) if participation is limited?

A simple 2×2 table, with institutionalization as the columns and diffusion as the rows, offers further analytical leverage (see Table 1). The quadrants indicating low or high levels represent both the behavioral elements of diffusion (how widespread a practice or organizational structure has become) and the cultural and cognitive aspects of institutionalization (how legitimate it is).

The upper right cell represents practices that have diffused and become institutionalized, pervasive, and accepted. Empirically, this condition is among the most familiar in the scholarly literature, as it combines both widespread adoption and legal or normative support. For example, human resource management departments and employee grievance procedures are now commonplace in contemporary organizations, so much so that we hardly question their existence (Dobbin and Kelley 2007; Dobbin and Sutton 1998).

Nonetheless, analyses of activities that are already widespread raise theoretical and methodological challenges. Investigating successful settings implies a "proinnovation" bias: what spreads either is beneficial or should be adopted rapidly by all

Table 1. Matrix Comparing Diffusion and Institutionalization

		Institutionalization	
		No	Yes
Diffusion	Yes	Ubiquitous but not accepted	Widespread, conventional, appropriate
	No	Uncommon and inappropriate	Accepted, but not prevalent

(Abrahamson 1991; Downs and Mohr 1976; Rogers and Shoemaker 1971). The focus on innovations in diffusion analysis also implies socially positive improvements: “innovation, like efficiency, is a characteristic we want organisms to possess . . . [and] . . . is a good word in modern society like ‘motherhood’ and ‘patriotism’” (Rogers 2003:110).

As a result, important aspects of diffusion can be underemphasized, such as access and ignorance, or rejection and reinvention. Furthermore, although the selection of successful cases of diffusion offers abundant data, model specification is problematic. Denrell and Kovacs (2008) argue that choosing “successful” empirical settings, where an innovation has diffused broadly, distorts findings: even if there is no contagion effect, a false negative contagion can be observed when analyzing widely diffused practices, even when nonadopters are included in a sample. Researchers might erroneously conclude that contagion does not matter and that diffusion is instead driven by functional necessity or overall cultural legitimacy.

One remedy for such concerns has been the examination of failures, which largely populate the lower left cell, where something neither diffuses widely nor becomes regarded as appropriate. Practices deemed illegal through the passage of a law or policy, such as insider trading or child labor, are obvious examples. Both were prevalent in the United States up through the early twentieth century, considered a “perk” for executives in the former case, and preferred in the latter as a cheaper form of labor (Zelizer 1994). Both were also challenged by law. Once extinguished, however, such situations are often perceived as the result of exogenous events, with controversy and organized challenges forgotten.

Suddaby and Greenwood (2005) analyzed the debate over multidisciplinary partnerships that would have combined accounting and legal services as a new organizational structure. This innovation never took hold, in large part because the partnership form was not perceived as sufficiently sovereign or professional. It also entailed inherent jurisdictional clashes between the advocacy of the bar and the accountability of the auditor. In this case, rivalry and dispute led to the triumph of one structure over another. Apart from exogenous “shocks” and rival alternatives, however, we know little about the relationship between the mechanisms that cause a practice to spread and those that cause it to fade away (Jonsson 2009).

The upper left cell represents practices that are common but not deemed acceptable. In 2006, the business pages were replete with stories about the backdating of stock options: more than 2,000 companies used them to sweeten top executives’ pay packages, prompting government investigation and investor lawsuits (Saul 2006). Deciding when to assign end-of-the-year holiday sales is a common challenge, and legal rules may give way to the convention of determining dates by whether the year was

financially successful. In another example, golden parachutes for CEOs of failing banks are now regarded as shameful by the general public, but the practice endures even with government funds intended to keep banks solvent (Hirsch 1986). Thus many activities diffuse widely but are not regarded as legitimate. Scant research has tackled the spread and depth of these types of behaviors.

Practices that have either widespread approval or legal sanction but are generally not prevalent, as represented in the lower right cell, are also rarely studied. Such activities are often backed by formal rules or legislation. For example, in the modern workplace, there is widespread acceptance that job postings should be neutral (or encouraging to women and minorities), but in reality, many hiring decisions continue to be gender-biased. Clearly, a number of forces are involved in the gap between general approval and widespread implementation; most notably, politics and power condition the degree to which organizational structures are actually put into practice (Aldrich and Fiol 1994; Aldrich and Ruef 2006; Clemens and Cook 1999). We often assume, however, that appropriate offices or agencies regulate such activities.

In other instances, practices that are legitimate but not widely used have fallen out of fashion or lost their perceived benefits. Consider, too, that similar activities can provoke very divergent receptions depending on the circumstance. Cosmetic surgery has become common in many nations, but elective surgery for teenagers, or its repeated use by adults, is looked at askance. Cosmetic surgery for burn victims raises no such qualms. These examples show that we lack a clear understanding about when new practices may become institutionally accepted without becoming commonplace, as also exemplified in our opening case of academic patenting.

It is relatively easy to demonstrate that diffusion and institutionalization can diverge. A more challenging task is to develop analytic tools that capture central and distinct features of the two processes in ways that might enhance our ability to examine more heterogeneous settings—for example, when practices spread or stick, and in some ways more than others.

SPECIFYING DIFFUSION AND INSTITUTIONALIZATION: THINGS THAT FLOW AND THINGS THAT STICK

A crucial distinction between diffusion and institutionalization is that the former is concerned with spreading, or how things flow, whereas the latter is concerned with stickiness, or how things become permanent.

How Things Flow: Theories of Diffusion

Diffusion reflects the spread of a practice or organizational structure within a social system and can be understood as both process and outcome. As a process, diffusion is important because it captures causal associations among external and internal determinants in a system, or in concrete terms, from a source to an adopter. As an outcome, diffusion is often considered less interesting, as the increased incidence of most things is arbitrary and does not reflect any form of contagion or communication (Rogers 2003; Strang and Soule 1998). For example, the spread of friendship as a governance structure or the increased incidence of melanoma as a function of political party affiliation offers little room for explanatory analysis through relations among individuals or groups.¹

¹There are notable exceptions to this argument when we consider the increased incidence of a disease that has a behavioral component, such as obesity, which has been linked to friendship networks

Contemporary studies treat diffusion indiscriminately, as the spread of all manner of social practices, from the use of a technology to specific beliefs to forms of organizing. Classical sociology took pains to identify the social phenomena that distinguished types of diffusion, rather than focus on classifications of the object that spreads. Early work pointed out that fads and fashions were particular forms of collective behavior that entailed a high degree of imitation, limited duration, and some element of novelty. Fads were typically explained by either social status or latent tendencies of participants (Aguirre et al. 1988; Blumer 1969; Lofland 1981; Simmel 1904). Later scholarship focused on the source of influence to distinguish forms of diffusion. For example, fads are driven by peer groups and imitation; fashions are spurred by opinion leaders who promote a practice but do not necessarily adopt it themselves (Abrahamson 1991).

More recently, diffusion has been classified by the type of influence required to reinforce adoption. *Simple* contagion requires exposure only once, as with a flu virus or knowledge about the results of a contest. *Complex* contagion requires multiple, independent sources of reinforcement to sustain the adoption of risky things such as avant-garde fashions or novel innovations (Centola and Macy 2007). Focusing on the type of reinforcement that drives diffusion permits examination of the source and character of diffusion as a form of collective behavior and shifts the diffusion-institutionalization distinction away from whether something persists to the factors that enable it to advance or disappear.

Process. Most diffusion studies draw on imagery of social influence and contagion. Early work in communication studies emphasized the channels through which an innovation was communicated, demarcating broadcast versus contact sources of influence. In the former, information is transmitted through mass media, rendering an object desirable or familiar; in the latter, interpersonal channels influence adoption. Under conditions of change, adopted practices may result from external cues as well, such as environmental events, direct incentives, or legislation. One shortcoming with the broadcast-contact distinction is that numerous forms of social influence take place through mediation and interaction with individuals who are not part of the population of adopters. This caveat places the burden of investigation on identifying different sources of influence and the roles associated with them, as most have a very limited effect on adoption (Rogers 2003).

Canonical diffusion scholarship focused on differential social positions to distinguish roles in diffusion. For example, professionals with expert credentials and higher social status helped initiate adoption (Coleman et al. 1957). “Opinion leaders” mobilized interpersonal relations such as peer groups (Katz and Lazarsfeld 1955). Exposure to external communication and information renders people more or less “cosmopolite” in their ability to wield social influence (Rogers 2003). Others have been regarded as “superspreaders,” reaching large numbers of adopters either through social ties or by being “infectious” to particular groups (Woolhouse et al. 1997). From this perspective, mass media and communication influences are mediated through a gatekeeper who directs the flow of information, emphasizing the fact that knowledge does not reach everyone at the same rate or same time. Thus access to information, advice, or even resources is conditioned on social ties,

(Christakis and Fowler 2007). Scholarship has, however, challenged these arguments about contagion on methodological grounds, demonstrating similar statistical associations of contagion in such asocial health outcomes as acne, headaches, and height (Cohen-Cole and Fletcher 2008).

whether the subjects who influence diffusion are the same as those who adopt what spreads.

From a relational perspective, arguments about source and type of influence can be viewed as a function of network positions within structures. Social cohesion through direct contact provides opportunities for reliable information, socialization, and tacit learning; common positions in a network provoke social comparison and competition (Burt 1987, 1992; Coleman et al. 1966). Shared identity and social categories (such as American, entrepreneur, or professor) also connect subjects who may adopt a new practice, invoking cognitive assumptions about similarity and expectations (Jonsson et al. 2009; Strang and Meyer 1993).

Whether differential roles in diffusion are based on network position, social status, or direct contact, contagion is best understood as a heterogeneous process that entails both internal and external sources of influence—i.e., distinguishing between the population through which something travels as well as the social setting that encompasses this process (Strang and Tuma 1993). Heterogeneity in diffusion refers to the mix of inherent propensities of adopters, such as individual attributes, and distinctive forms of intrapopulation contagion, such as spatial or social proximity. Advances in modeling have enabled disaggregation of contagion effects into individual susceptibilities, the degree of infectiousness of prior adopters, and relational distinctions such as the specific kind of social proximity of a potential adopter to a prior one (Strang and Tuma 1993). The challenge with epidemiological imagery, however, is that it focuses on the population that is at risk of adopting. Susceptibility and infectiousness, however, can apply to members of a social setting who only influence, as well as to members of a population that may potentially adopt.

For example, Stinchcombe (2002) emphasized the importance of proselytizing in social change, which occurs among potential or prior adopters as well as many organizational sources of influence. Analyses of social movements have demonstrated that activists are critical for articulating claims for or against certain organizational practices. Early response to pressure by some organizations can influence the potential for others to adopt as well (Schneiberg and Lounsbury 2008). Briscoe and Safford (2008) demonstrate that the diffusion of domestic partner benefits among mainstream companies was initiated by external activists and then catalyzed by adoption in highly visible, activism-resistant firms. Employee advocates within activist-prone organizations influenced the *propensity* to adopt domestic partner benefits; those in mainstream firms shaped their *susceptibility* to other adopters. Activists and opinion leaders have differential degrees of infectiousness, depending on the social ties and status of at-risk adopters. Thus prior adopters may influence the susceptibility of some groups yet reinforce the infectiousness of others. The concepts of susceptibility and infectiousness provide a theoretical basis for distinguishing differential effects that internal and external sources of contagion have on diffusion.

Collectively, the subjects who adopt, whether individuals or organizations, have exhibited remarkably similar patterns, although through varying mechanisms and theoretical assumptions. Traditional diffusion models are often represented as S-curves (Griliches 1957). Adoption begins slowly, accelerates, and then declines, reflecting the saturation of a population at risk of adopting. Economics of innovation scholarship emphasizes that disparate expectations about the benefits of a new technology generate heterogeneity among consumer choices: the choice to adopt a technology is a matter of benefits outweighing costs (Hall 2004). This same pattern has been observed through mechanisms of learning and communication: the likelihood for

individual adoption increases as potential users gain access to information about an innovation (Ansari et al. 2010; Hall 2004). From the economics of innovation perspective, the principal question about diffusion hinges on explaining differential rates of adoption across geographies or technology types.

Organizational research has problematized how inefficient innovations diffuse broadly, highlighting the symbolic role that adoption plays as a signal of legitimacy or innovativeness (Abrahamson 1991; Meyer and Rowan 1977). These insights draw on a conception of a two-stage model whereby early adoption occurs for technical purposes and is followed by adoption for symbolic reasons (Tolbert and Zucker 1983). Such patterns, however, can be explained by multiple, often competing, mechanisms, including (1) the decreased tendency of adopters to make changes to a diffusing practice, thus explaining the declining explanatory weight of efficiency variables (Westphal et al. 1997); (2) social learning factors, as later adopters come to know more about what works and need to experiment less (Levitt and March 1988); (3) the creation of standards to guide new adoptions (Jacobsson 2000); and (4) changing framing of problems and solutions over the course of diffusion (Kennedy and Fiss 2009). The analytic insight is that factors associated with adoption are likely to shift over time (Tolbert and Zucker 1983; Westphal et al. 1997). Often, causal significance shifts from variables reflecting the propensity of at-risk adopters in the early stages to those associated with contagion in later stages, as the proportion of adopters increases (Strang and Soule 1998).

Research examining managerial fads and fashions has emphasized life cycles of diffusion, whereby a complete diffusion cycle includes an increase in popularity, followed by a drop-off. Such arguments conceptualize decline as abandonment or replacement rather than saturation in a population at risk. This approach opens the way to analyze the adoption of nonbeneficial innovations, the abandonment of beneficial ones, and the transience of most new practices (Abrahamson 1991; Zucker 1977). For example, Abrahamson and Fairchild (1999:731) examine four managerial fashions—total quality management, business reengineering, quality circles, and job enrichment—demonstrating that the life cycle of these practices co-evolved with surges in managerial discourse. Managerial fashions began with a latency phase, followed by a wave-like popularity curve that varied in conjunction with “management-knowledge entrepreneurs,” such as consultants, journalists, or scholars. Unlike the two-stage model that emphasizes the explanatory factors of adoption, stages here relate to the life-cycle pattern of adoption: latency to popularity to retention to abandonment. One pitfall in diffusion research is the tendency to conflate long duration of a practice with resilience and invulnerability to competing alternatives. This line of work provides a basis for identifying stages in a diffusion cycle through the behavior of prior or potential adopters, in addition to the capacity of a system.

These disparate perspectives on diffusion patterns, whether an S-curve, life-cycle, or stage-like process, share a common theme of reinforcement and feedback. Most accounts of feedback entail some form of information about the objects that spread or the subjects who might adopt. For example, information from professionalized experts may render an innovation beneficial. The subjects may adopt a practice to signal legitimacy or innovativeness. Reinforcement, however, can take numerous forms and reflect on the settings as well. The size of the population and whether it can expand will reinforce the diffusion process. Learning about applications and uses in differing settings enables practices to jump to new populations and can feed

back into the further modification of the original innovation (Rosenberg 1976).² Compatibility in the social, normative, or material structure through which a practice diffuses provides important forms of alignment that reinforce diffusion by amplifying the speed of adoption and expanding the population of potential adopters (Katz 1999).

Network perspectives have also afforded insights into the role of the social setting in reinforcing diffusion by providing measurable properties of social structures. For example, scholars distinguish between small-world and scale-free networks based on the degree of clustering and average path length among individuals or organizations. Small-world networks, which have local clustering with a small fraction of far-reaching short-cuts, appear in diverse social, biological, and technical settings (Milgram 1967; Uzzi et al. 2007; Watts 2004; Watts and Strogatz 1998). Such network structures can exhibit remarkable stability, despite perturbations that can rewire individual linkages, such as high rates of cross-ownership turnover in German firms (Kogut and Walker 2001). In contrast, scale-free networks, which reflect a relatively small number of nodes with high degrees of connectivity, are much more susceptible to small changes (Albert et al. 1999). This perspective provides generalizable properties and metrics of network structure that shape the pace and likelihood of diffusion in ways that challenge standard epidemiological models (Watts 2004). Whereas small-world networks are robust in structure, the spread and reach of contagion can be highly sensitive to small and local changes (Watts and Strogatz 1998).

Outcome. There are numerous theoretical reasons for investigating what happens to objects, subjects, and settings in the process of diffusion. Many emphasize the lack of attention to social consequences and how the diffusion of innovations reproduces gaps in access and socioeconomic status (Drori 2005). Others caution that what travels is transformed, through either selection among competing alternatives or adaptation of the same object (Ansari et al. 2010; Sahlin-Andersson 1996; Strang and Meyer 1993). By also considering outcome, diffusion studies could provide richer contributions to analyses of success or failure, and of how the factors that cause a new practice to spread generate disparities, shape social settings, and transform objects.

One determining aspect of successful diffusion is the complexity of contagion and its relationship to structural properties of social relations. Centola and Macy (2007) demonstrate that network effects are highly contingent on the form of contagion required for diffusion (i.e., whether simple or complex) and the relational and structural nature of ties (i.e., the strength of interpersonal relationships compared to the ability to link across social topologies). Complex contagion depends not only on the ability to link socially or spatially distant nodes in a network, but on the width of those bridging ties as they provide confirmatory reinforcement for what is diffused. Structurally weak but bridging ties may be sufficient for the spread of goods that can be channeled and switched, such as information or communicable disease in social networks. But they are insufficient for objects requiring multiple or independent means of reinforcement, such as expensive or controversial innovations. For the consequences of diffusion, these findings are important because complex contagion requires fewer ties to impede diffusion and more ties to amplify it (Centola and Macy 2007).

²Early adopters have a higher likelihood of modification and customization (Hall 2004).

Diffusion as an outcome also shapes social structure. First, diffusion produces multiplexity by generating common social categories of adopters and drawing new links among individuals and organizations. Multiplexity generates manifold contexts for interaction by layering, for example, ties of friendship over those of occupation, religious affiliation, and civic membership. A greater degree of multiplexity may constrain behavior (Krohn et al. 1988), but it may also increase susceptibility to the adoption of other practices. Consider the infection of a chronic disease, such as HIV, that takes on a social meaning once people are infected, or the spread of a religion that transforms converted individuals into a new identity, which in turn conditions the probability of adopting related practices. Converting to Scientology, being infected with HIV, or even becoming a professor generates a topology of social structure, layered on top of existing ones, that may or may not align with the status quo. Structure shapes diffusion, but the spread of practices and organizational forms, in turn, shapes social structures.

Second, diffusion influences social structure when the sequence of contact determines contagion and susceptibility. Romantic networks among adolescents channel the spread of disease in a very different way from what standard epidemiological models would predict (Moody 2002). Rather than a network of infectious cores of highly connected individuals that radiate disease out to the wider population, the romantic network resembles a spanning tree that is governed by rules that preclude certain forms of attachment. A simple social mechanism explains the observed structure: “Don’t date your old partner’s current partner’s old partner” (Bearman et al. 2004). When the spread of something hinges on discrete, temporal contact, susceptibility is conditioned on sequential paths of connection. These paths, in turn, shape the rate and direction of diffusion, as well as the structure of social networks. Such timing of relationships “acts like a railroad switch” that channels goods along different relational tracks, depending on the ordering of contact (Moody 2002:27). Susceptibility thus becomes a function of both the potential and probability of adoption, with highly structural causes and consequences.

A focus on diffusion as an outcome also lends insight into the transformation of what diffuses. Viruses that spread often mutate, information can grow thin as it is transmitted, and organizational structures can become more elaborate as they are rendered more efficient or important. Practices alone are not the objects that diffuse. Rather, careful framings and theorized models develop and transform as they spread (Czarniawska and Joerges 1996; Djelic 2008; Strang and Meyer 1993). For example, professionalized experts help to rationalize metrics of evaluation and performance, articulate abstract categories, and develop patterned chains of cause and effect (Hwang and Powell 2005, 2009). Abrahamson and Fairchild (1999:711) demonstrate how managerial discourse delineates common categories of organizations “in that they all suffer from a common environmentally induced performance gap . . . and could benefit from adopting one category of innovations to narrow such a gap.”

Diffusion may also reflect an ensemble of practices that build up and become complementary as a result of transmission, like a candle that is repeatedly dipped in wax. The adoption of TTOs among universities does not simply entail an administrative apparatus to execute patents and licenses. As more scientists became involved, policies have developed that defined conflicts of interest, allowed faculty members to take leave to start a company, and protected intellectual property (IP) when in collaborations with firms (Colyvas 2007).

The object that spreads may also be transformed in its depth. Such situations are often highly affected by the form of social influence. Macy and Willer (2002) offer an apt imagery through their review of agent-based modeling approaches to social processes. Mimicry can be like an agent adopting something through imitation, without altering any internal programming, which can render what diffuses thin and superficial. Legislation modeled after the 1980 U.S. Bayh-Dole Act, which gave IP rights in publicly funded research to universities and individuals, has spread widely throughout Europe and Northeast Asia. Many countries have modeled their university and innovation policies on American ones, without altering internal organizational features that were critical in U.S. universities (Powell et al. 2007). Adaptation thus not only adds layers but removes them as well.

Much work has focused on the homogenizing effect of diffusion on social settings (Boxenbaum and Jonsson 2008). But the spread of a practice can also generate differentiation rather than increased similarity, by prompting search and selection through nonimitation efforts. Innovations in radio programming prompted search and awareness of different market segments and types of programming available to stations (Greve and Taylor 2000). Similarly, Schneiberg's (2002) analysis of alternatives to market capitalism in the early twentieth century reveals that a mutual cooperative movement persisted in the face of Wall Street, most notably on those "main streets" where Scandinavian and Northern European immigrants maintained communitarian principles. Farmers, dairymen, custom machine toolmakers, and members of numerous associations from mutual savings to fire insurance to rural electric coops all evinced considerable fidelity to one another, in stark opposition to the organizational forms of market capitalism. More attention is needed to how the spread of something is conditioned on the social organization of particular settings, and what the implications are for existing structures, potential new ones, and the interrelationships among them.

Summary and Propositions. These insights can be summarized as a set of claims and propositions that distinguish diffusion and predict its effects. Diffusion as a process is characterized by contagion, most notably direct contacts, shared social categories, and information from influential sources. In order to advance, diffusion requires reinforcement; without feedback the object that spreads may prove fragile and ephemeral instead of robust and long-lived. Diffusion takes many forms, which depend less on the characteristics or resilience of what spreads, and more on the form that reinforcement takes.

Proposition 1. The duration and resilience of an object that diffuses will depend on the presence or removal of the modes of reinforcement.

Diffusion is influenced by both internal sources—the population through which something spreads—and external ones—the wider field and social setting. Contagion and reinforcement are heterogeneous processes: infectiousness and susceptibility apply to both the members of a population who adopt and the members of the wider field who influence. These relational and structural factors shape how an object may travel. Thus the pace and pattern of diffusion are contingent on (1) the degree of simplicity or complexity of contagion; (2) the loci of contagion in internal or external sources; (3) the impact of sources of contagion on degrees of susceptibility and infectiousness; and (4) whether the life cycle of diffusion is influenced by the varying popularity of the thing that spreads (a feature of the object), or saturation of a population (a feature of the setting), or both.

Diffusion as an outcome depends on alignment among the object that spreads, the subjects who adopt the object, and the social and cultural elements of the setting through which the object travels. What is less often discussed is how alignment and diffusion can impact existing social orders. If diffusion is a function of social fit, then diffusion also suggests support for a social order. The loci and strength of alignment shape the degree to which diffusion reinforces the existing social order.

Proposition 2. The greater the degree of alignment with the social order, the higher the likelihood that diffusion will reinforce existing status structures and inequalities.

The form an object takes is likely to transform as it travels, either by competing alternatives (i.e., selection) or by the transformation of what diffuses (i.e., adaptation), and depends on the loci, degree, and sequence of exposure. Simple contagion involves much less interaction and decreases the incidence in which the object that spreads may be modified in its transmission. Complex contagion involves an increase in disparate forms and sources of interaction, with stronger effects but also more opportunities for modification.

Proposition 3. The simpler the contagion necessary for adoption, the greater the likelihood that adoption will occur through selection and the lower the likelihood that the diffusing object will be transformed. The greater the complexity of contagion necessary for adoption, the higher the likelihood of adaptation and transformation of the object that spreads.

Internal sources of contagion, however, include more opportunities for modification of, and experimentation with, the object that diffuses by the subjects who adopt. External sources of contagion—for instance, experts and opinion leaders—will likely assume the task of selection and theorization of the object, transmitting information to potential adopters.

Proposition 4. The stronger the sources of internal contagion, the greater the likelihood of adaptation and mutation of the object that spreads. The more varied the sources of external contagion, the greater the likelihood of selection and the lower the likelihood of modification of the object that spreads by the subjects who adopt.³

Taken together, the interaction between forms and sources of contagion depends on the temporal dimension of exposure. Simple contagion relies more on sequential timing of contact because only one source is necessary for adoption. Complex contagion depends less on discrete timing of contact, because multiple sources must reinforce the adoption of what spreads, and more on the proportion of prior adopters and the degree to which they are linked structurally.

Proposition 5. The greater the simplicity of contagion, the stronger the importance of discrete timing of contact. The greater the complexity of contagion, the stronger is the importance of the stage of diffusion and structure of contact.

The interaction between forms and sources of contagion is a dynamic process and will vary differently as the proportion of adopters increases over time.

³The difference between this proposition about sources of influence and the previous one about complexity is notable. Whereas highly complex cases of contagion have a higher likelihood of modification, varied external sources of influence have a lower likelihood of adaptation. Multiple, varied, external sources of contagion do not necessarily make diffusion complex. Political opinions about cause and effect of certain practices often emanate from multiple sources that have distilled the message, making way for much less opportunity for adaptation of a theorized model because it has already been selected.

Proposition 6. The greater the simplicity in contagion, the stronger the effect of internal sources of contagion in the early stages of diffusion. The greater the complexity in contagion, the stronger the effect of internal sources of contagion in the later stages of diffusion.

How Things Stick: Theories of Institutionalization

Whereas diffusion examines what spreads, institutionalization attends to what sticks. The analysis of institutionalization turns on a definition, as semantically the term reflects the conversion of something into an institution. As a social order, institutions can be defined as a “system of rules, beliefs, norms, and organization that can jointly generate a regularity of behavior in a social system” (Greif 2006). As a pattern, institutions reflect “repetitively activated activity sequences” that “reveal a particular reproduction process” (Jepperson 1991:145). We follow the sociological tradition that treats institutionalization as both a process and an outcome, representing the manner of attaining a social order that reproduces itself, as well as the state of having realized this order. As such, institutionalization is both a field-level, higher- and lower-order phenomenon that manifests as practices and structures across and within organizations.

References to institutionalization have taken many forms, from the implementation of a new technology by a community of users to the conversion of a social practice, such as marriage or a handshake, into repeatedly activated rituals. For the purpose of comparison to diffusion, we focus on the integration of new practices or organizational structures into a social system. We treat the precise definition of institutionalization as an analytic decision, depending on the level of analysis and the objects and subjects being investigated. In making these conceptual distinctions, we are able to distinguish between institutionalization and institutional effects. The latter are critical to many classes of diffusion but, we stress, not necessarily indicative of institutionalization.

It is much easier to identify where institutionalization has taken place than where it is absent or has failed. Characteristic features of institutionalization include the degree of integration of a practice into a social order, reproduction without substantial recurrent mobilization, and invulnerability to contestation (Scott 2001). Behind these indicators, however, are core processual features that distinguish diffusion from institutionalization, and institutionalization from other forms of social reproduction. A practice or organizational structure is institutionalized when values associated with it are integrated with areas in social life that are able to sanction or enforce it, such as law or government policy (Stinchcombe 1968). Institutionalized structures become symbolic, are produced through interaction, and are externalized and made objective as fact (Berger and Luckman 1967). Institutionalization does not require formal organization, codified rules, or centralized authority systems. Normative and cultural sources that are neither formally monitored nor explicitly codified may independently facilitate institutionalization (Ruef and Scott 1998). The key is that a practice or organizational structure becomes self-reproducing, rendering institutionalization a particular class of social reproduction (Jepperson 1991).

Process. As a process, not all forms of reproduction reflect institutionalization. A common approach is to look at incentives as one mode of support, and sanctions as reinforcement (Lawrence et al. 2001). As Jepperson (1991) notes: “When departures

from the pattern are counteracted in a regulated fashion, by repetitively activated, socially-constructed controls—that is by some set of rewards and sanctions—we refer to a pattern as institutionalized” (1991:145).

Yet a focus on inducements can be misleading. Scholars have compared institutionalization to action as a distinctive, often weaker form of reproduction: “A social pattern is reproduced through action if persons repeatedly (re)mobilize and (re)intervene in historical processes to secure its persistence” (Jepperson 1991:45). Voting in many countries requires substantial intervention and mobilization despite formal laws and codified procedures. Democracy in some countries also entails intervention to enforce it. From this perspective, action reflects an interruption or departure: “If shaking hands is an institutionalized form of greeting, one takes action only by refusing to offer one’s hand. If attending college has become an institutionalized stage of the life course, a young person takes action more by forgoing college than by enrolling in it” (Jepperson 1991:148). As a mode of reproduction, action is thus weaker because engaging in such acts of disruption does not transform what is already institutionalized. On the contrary, action may reinforce existing structures as it prompts greater efforts to preserve the social order (Schneiberg and Lounsbury 2008). Indeed, many institutionalized practices are contested. For this reason, opposition, mobilization, and response to contestation provide indicators of institutionalization, yet do not necessarily distinguish it from other forms of reproduction.

As in diffusion, a practice or organizational structure may be adopted, yet a core analytic focus for institutionalization is how something becomes self-reproducing, rather than the factors affecting the trajectory of adoption. For example, recent scholarship has delineated how socialization, peer influence, and organizational attributes shape patterns of adoption of commercial practices in academia (Bercovitz and Feldman 2008; Stuart and Ding 2006). Having co-authors and department colleagues with entrepreneurial experience increased the likelihood of faculty engaging in commerce. In particular, contagion and social influence help explain how commercial science moved from the domain of high-status faculty to early career stage scientists. But the institutionalization of academic research entailed the mutually reinforcing development of categories and routines that shaped the meaning and form that technology transfer took in academic science (Colyvas 2007; Colyvas and Powell 2006). Commercialization procedures had to be integrated into university administrators’ existing practices and rationales, such as conflict of interest regulations. The assimilation of commercial practices into the laboratory extended patenting into research and training aspects of university science, which doctoral graduates carried with them as they established themselves in other universities. Commercial science was thus reproduced by becoming part of the procedures of university personnel administration, attaching to the routines of publication in science, and tapping into the established system of doctoral training and production of faculty. An institutionalized practice or structure requires integration into existing modes of reproduction that reside at multiple levels, such as the professions in the case of norms of academic science, local routines as in the administration of technology transfer, and more portable principles of university identities as in ways to address conflict of interest.

Claims about institutionalization emphasize legitimacy as a crucial form of normative support, which organizations obtain by adopting structures that link to broader cultural frames (Meyer and Rowan 1977; Zucker 1977). The legitimation of a structure, in turn, supports the reproduction of practices insofar as this linkage takes place. Suchman (1995:574) defines legitimacy as “a generalized perception or

assumption that the actions of an entity are desirable, proper, or appropriate within some socially constructed system of norms, values, beliefs, and definitions.” Too often, however, legitimacy as an explanatory mechanism is treated as that which is socially desirable and appropriate. Yet many practices and structures can take on features of legitimacy without ever becoming institutionalized.

For institutionalization, the analytically important feature of legitimacy is the connection of a repeated pattern of activity to higher-order cultural frames, norms, and rules conditioning the connection between meanings and practices, and thus directing the range of what is permissible (Friedland and Alford 1991; Scott 2001:58). This condition is critical in not equating institutionalization with either formal authorization or faddish organizational innovations. Formal authorization may render a structure legally appropriate but not be characteristic of self-reproduction, and fads may be highly theorized as desirable by experts but easily abandoned as soon as the inducement is removed or the practice is replaced by an alternative. Although some forms of legitimacy, such as a law or policy, may reinforce a practice that spreads or may even facilitate its adoption, the source of legitimacy does not necessarily cause a practice to reproduce. From a processual point of view, legitimacy is not always a causal or sufficient condition in institutionalization.

Core arguments in institutionalization also emphasize the cognitive features of reproduction. Structures are institutionalized insofar as they are part of a system of meaning (Dobbin 1994; Zilber 2006). Once a thing is taken for granted, it becomes a widely shared presumption and shared collective understanding that is habituated through practices (Berger and Luckman 1967), which become “infused with value beyond the technical requirements at hand” (Selznick 1957:17). An important metric of institutionalization is the embedding of practices and categories in routines and logics of action that are then largely unquestioned (Colyvas and Powell 2006). Thus the extent to which a feature of social organization—such as a practice, category, or mode of exchange—is understood to be evident and accepted as real or true provides an indicator of institutionalization. But like legitimacy, many areas in social life are imbued with taken-for-grantedness in ways that do not fuel institutionalization. The mere presence of legitimacy or taken-for-grantedness does not explain institutionalization. Rather they must become mutually reinforcing in ways that either support or generate the reproduction of practices or structures.

Like diffusion, institutionalization exhibits stages and cycles (Lawrence et al. 2001). Patterns of reproduction have typically been described as multilevel and continuous, as opposed to a threshold-like imagery in diffusion that is driven by the momentum produced by influential sources. Berger and Luckman (1967) articulate three stages—externalization, objectification, and internalization—that processually characterize this form of recursive and multilevel reproduction. First, shared meanings are produced through interaction and symbolic structures (externalization). Next, these meanings and structures become a “facticity,” or commonly shared reality (objectification). Last, the externalized and objectified reality reenters the cognition of individuals through socialization (internalization).

For example, formalized grievance procedures within organizations became the standard form of compliance with equal employment opportunity (EEO) law, not just because everyone adopted them, but because they rationalized a belief that they protected organizations from legal costs (Edelman et al. 1999). Legislation such as the 1964 Civil Rights Act prompted organizations to generate stories that linked compliance to market rationality and specific procedures. These “organizational ideologies of rationality,” in turn, induced the courts to formally incorporate grievance

procedures “into legal constructions of compliance with EEO law.” Grievance procedures took on a symbolic status as a rational means of buffering from legal costs, a basis for defense in employment discrimination cases, and an organizational gesture of nondiscrimination. The institutionalization of EEO governance thus entailed the generation of coherent stories that corresponded to market rationalities, which percolated up to legal jurisdictions through repeated routines of litigation that rendered the initial structure of grievance procedures as compliance objectified as fact. This facticity was then reinfused into firms and employees as a taken-for-granted part of the work setting.

A notable feature in the institutionalization of EEO is how much governance occurred at multiple levels: in the field, through the assimilation of the principles and practices into law; at the organizational level as a rationalized response to legal mandates; and among individuals by its integration into everyday procedures and employee expectations. Such complexity is often obscured in traditional models that map these macro- and micro-dynamics onto levels of analysis. Consequently, it is critical to distinguish between higher- and lower-orders and macro- and micro-levels of observation.

Higher-order forms of institutionalization may manifest in varied micro-level contexts. For example, scientists maintain a standard of priority of discovery through everyday publication and citation practices (Merton 1973). Yet scientists may exhibit widely different ways of managing their laboratories and allocating tasks among members, as new lab members integrate into projects with experienced ones, or graduates continue in their careers and found their own labs with similar practices. This approach shifts the emphasis away from levels of analysis (e.g., whether an individual or an organization adopts a structure) to higher- and lower-order effects.

One strategy for examining the distinction between higher and lower orders is to compare the objects that are being institutionalized. For example, as a cultural tenet and authority structure, science permeates numerous institutions, from education to national governance to industrial performance, in ways that are beyond local needs for resources and serve many of the same authority functions that religion once did (Drori et al. 2003). Science reflects a “cultural canopy” that provides the basis for evidence in public debates, a compulsory rite of passage in education, and a methodology for discerning order in the world. As an organizational form, technology transfer has become a core feature of academic science, now introduced into the curriculum in most graduate programs, like ethics or institutional review boards. Offices of technology licensing are now a legitimate part of research universities, and patenting research findings has become taken for granted in many fields of academic science, even though participation varies sharply among faculty and scientific disciplines.

The introduction and spread of a new practice or organizational form is part of a nested and layered set of phenomena. These insights direct analytic investigation toward the identification of higher- and lower-order linkages and how such connections generate reproduction. Seen in this light, the main question is to decide when practices or structures reflect meaningful institutionalization or simply local variation of the same structure.

A central issue in the conflation of diffusion and institutionalization is that the latter can often be equated with institutional effects, such as cultural linkages and theorization. If we take institutional effects as a class of causal arguments as “higher order constraints imposed on socially constructed realities,” they are distinguishable from both environmental effects (e.g., a sudden economic crisis), and relational forms

of contagion (e.g., romantic networks) that play an important role in the rate and direction of diffusion (Jepperson 1991; Strang and Meyer 1993).

Institutional effects, however, are also insufficient for institutionalization. Many fads entail the delineation of categories, links to patterned sequences of practices and outcomes, and the authorization of experts. Early-twentieth-century expert parenting movements focused on building discipline, eschewed open displays of affection, and advocated little more than a firm handshake for children (Watson 1928). This approach was replaced by ideals of natural insight and affection through the high-profile advocacy of Spock (1946). More recently, virginity pledges as a means of promoting abstinence have spread among more than 2.5 million adolescents, fueled by the Southern Baptist Church, where the link to an identity movement has reinforced its adoption (Bearman and Bruckner 2001). Too few or too many adopters, however, seems to decrease the efficacy of the pledge, particularly in socially closed schools: “the identity pledge is meaningful, consequently, only if it is a minority identity, a common situation for identity movements,” because in order to take hold, it has to have a nonnormative component. The institutional effects of shared meaning and association with church practices and identities generate a threshold for adoption but do not make the practice self-reproducing. Here the contagion of a practice eventually generates its own demise.

Outcome. Treating institutionalization as a class of reproduction has numerous implications for the form of what becomes institutionalized as well as the setting into which an object is integrated. As in diffusion scholarship, the form and consequences of what becomes institutionalized have been overlooked, and too often the pattern that becomes institutionalized is treated as though it is functional and inevitable (North 1990; Pierson 2000; Thelen 2004).⁴ A practice may take the form that it does through either selection among competing alternatives, or some form of adaptation; practices or structures develop and transform as they become integrated into a setting. And the consequences of institutionalization are multilevel, complex, and emergent, meaning that the effects on a social system are greater than and different from the aggregation of the individual parts. This aspect of complexity and emergence makes institutionalization both “immune to reasonable variations in the individual behavior” on the one hand, and also subject to large consequences from seemingly small events on the other (Holland 1995; Miller and Page 2007:46). These perspectives shift the focus away from the causal determinants of broad-scale adoption to how institutionalized structures take the form that they do and where lever points reside that make such structures persistent or vulnerable to change.

Examining alternative or counterfactual forms of organizing adds considerable evidence to both the complexity and malleability of what is institutionalized. A frequent type of counterfactual focuses on whether an outcome would have occurred without a particular cause ($A \rightarrow B$), whereas institutionalization underscores how a class of outcomes might manifest differently (Fearon 1996; Thelen 2004). For example, organizational forms often emerge from a range of alternatives that are selected and recombined, which then generate adaptation. When patenting was first introduced to university life scientists, practices and conceptions related to what kind of scientific finding was an invention, who was an inventor, and how revenues ought to be shared varied markedly (Colyvas 2007). A prevalent model directed revenues from licensed

⁴For a more detailed discussion of different approaches to the analysis of institutional change, see Thelen (1999).

inventions back to the laboratory, despite codified policies that provided incentives for personal shares to the inventor. Others reasoned that regardless of who is the legal inventor on a patent, personal revenue should be divided among co-authors. Still others chose to donate their personal income as a symbolic gesture, keeping out of the business aspects of science. Eventually, practices were harmonized and exceptions were categorized and codified with rules and procedures.

Examining institutionalization outcomes also directs attention to higher-order consequences of lower-order effects, reversing a general causal focus from macro-constraints on micro-activities to micro-processes on higher-order outcomes (Schneiberg and Clemens 2006). Much scholarship on institutionalization has focused on the one-way social and economic consequences of the integration of new practices from one domain into another. In the academy, the institutionalization of patenting reflects a broader amalgamation of public (university) and private (industry) science, producing what scholars deem a hybrid order with new fault lines in scientific stratification (Rhoten and Powell 2007). Blurred boundaries between public and private science have created a new arena for competition among universities, where success in one realm is necessary for maintaining status in another (Owen-Smith 2003).

The form that technology transfer took in academic science proved to be much different in practice and structure from its industrial counterpart. Furthermore, it co-evolved as a result of institutionalization itself. The institutionalization of technology transfer in academic science consisted of the redrawing of boundaries, extending the university further into industry and deepening commercial practices into research and training. This hybrid order changed metrics of performance, directing greater attention to numbers of patents and licensing income generated, and it has altered career paths for students (Colyvas and Powell 2006, 2008). The impact on occupational categories and careers has also prompted cultural traffic between universities and industry, incorporating the prior experiences of scientists and constituting a new knowledge regime (Vallas and Kleinman 2008).

In addition, institutionalization forges new links and creates new forms of interdependence among domains, particularly when individuals have roles in multiple spheres, even when the institutions themselves, such as religion and the economy, or science and industry, are partitioned into separate spheres of social life (Merton 1973). This two-way flow of institutionalization is conceptually obscured when viewed through the lens of diffusion alone.

Summary and Propositions. In contrast to diffusion, which is characterized by contagion and reinforcement, institutionalization is contingent on legitimacy and reproduction. Notable characteristics of institutionalization include the presence of cultural or regulatory forms of authorization, particularly legal mandates or deeply valued conventions. Legitimacy alone, however, is insufficient for institutionalization, as evidenced by the numerous ways fads and fashions are authorized or culturally supported. Rather, institutionalization relies on some means by which a practice or structure is reproduced.

Proposition 7. The persistence of an object that becomes institutionalized will depend on the presence or removal of modes of reproduction.

Institutionalization is influenced by formal and informal sources residing in both the broader field and the immediate social setting, most notably the cultural and cognitive foundations that govern the range of actions that are permissible to pursue. Institutionalization is also a heterogeneous process, but the difference from diffusion

is notable. In diffusion, heterogeneity refers to internal and external sources of contagion and subjects' degree of susceptibility and infectiousness. In institutionalization, heterogeneity reflects formal and informal sources of authorization and the degree of vulnerability and stickiness.

Proposition 8. The more vulnerable an institutionalizing object is to challenge, the greater the level of inducement necessary to secure the pattern's persistence.

Institutionalization entails the integration of new practices or structures into sources of reproduction, usually existing ones such as law, the professions, identity categories, and patterns in the life course. This feature of integration among the objects, subjects, and setting in which a practice or structure is reproduced is in contrast to diffusion, which emphasizes alignment as a means of reinforcing a practice that spreads. In this respect, institutionalization is distinguishable by the *strength* or *durability* of connections between actions and cultural or cognitive frames.

Proposition 9. The greater the degree of integration of objects into modes of reproduction, the stronger the form of institutionalization.

The degree of integration can increase in terms of (1) the number of connections between practices and modes of reproduction, such as a rule mandating a practice; (2) the related set of routines within which a practice is embedded; and (3) the theorized values with which a practice is associated. Multiple connections work like tendrils that wrap around all aspects of a structure.

Proposition 10. The more numerous the connections into modes of reproduction, the stronger the degree of institutionalization.

The degree of institutionalization may also be gauged by the diversity of links among distinctive cultural frames and identities because subjects and settings are generally characterized by multiple, often layered, institutions. Such diverse connections operate like tentacles that anchor multiple aspects of a field.

Proposition 11. The more varied the links between objects and subjects among multiple institutions, the greater the degree of institutionalization.

The *depth* of institutionalization depends on the extent to which objects and subjects become embedded in both higher- and lower-order frames, rules, and routines in a social setting. Links to only higher-order modes of reproduction will result in *thin* or *shallow* forms of institutionalization because local patterns may persist independently from higher-order structures. This form of decoupling is in contrast to cases where the links are only to lower-order modes of reproduction. Such instances result in *weaker* or *less durable* forms of institutionalization because the patterns are more easily interrupted or extinguished. Thus links to both higher- and lower-order modes of reproduction will result in deeper and stronger degrees of institutionalization.

Proposition 12. The more varied the links between higher- and lower-order modes of reproduction, the deeper and stronger the form of institutionalization.

Last, we argue that diffusion as an outcome is more likely to reinforce the social order. Because institutionalization entails the establishment of multilevel and bidirectional links, its consequences are more likely to transform the setting and field into which an object is introduced.

Proposition 13. The greater the degree of integration with the social order, the higher the likelihood that institutionalization will transform status structures.

AN AGENDA FOR INVESTIGATING DIFFUSION AND INSTITUTIONALIZATION

We have identified theoretical markers for analyzing diffusion and institutionalization empirically, delineating core points of distinction. As a process, diffusion emphasizes contagion and reinforcement, whereas institutionalization emphasizes patterned activation and reproduction. As an outcome, diffusion is contingent on alignment with existing cultural and cognitive frames, whereas institutionalization depends on actual integration into modes of reproduction. Diffusion emphasizes the pace and pattern of the object that spreads; institutionalization underscores depth and durability. Feedback in diffusion points to information and exposure, whereas feedback in institutionalization emphasizes the higher- and lower-order links that become mutually reinforcing.

We began with the example of academic patenting and the puzzle of whether this case represents diffusion or institutionalization, success or failure, fad or meaningful change. Our exercise sheds light on this question, especially when the objects, subjects, and settings are clearly identified and contrasted in terms of reinforcement for diffusion and reproduction for institutionalization.

We have shown that, although the organizational structure of TTOs diffused broadly and became institutionalized through formal and informal measures, the actual practice of patenting among scientists remains limited to a small segment of the population. The proportion of participation is often confused with propensity because the likelihood of engaging in patenting practices has increased—particularly among successful, “star” scientists with more research funding and publications—and extends to those who are socially proximate to them, such as co-authors, department colleagues, and advisees (Bercovitz and Feldman 2008; Stuart and Ding 2006). In this case, the diffusion of patenting practices reinforced university technology transfer—first by supporting a repetitively activated routine of privately disclosing knowledge, and second by passing the practice on to graduate students, which taps into a primary mode of reproduction in academic science.

This case also highlights the differential effects of both processes on the fields in which they take place. For scientists, the diffusion of patenting reinforced the existing status ordering of the academic profession—reproducing the stratification of science by tapping into the same mechanisms that make the successful become more successful, such as resources, publication productivity, and training in a highly prestigious lab (Merton 1973). For universities, however, the institutionalization of technology transfer provided a new arena for competition and status orderings, whereby success in one domain can be leveraged into advance in another (Owen-Smith 2003).

We thus demonstrate that a structure can be highly institutionalized, yet the practice can be only modestly diffused, so much so that most scholars conflate the legitimacy of the practice with its ubiquity. This insight takes us back to the 2×2 matrix with which we began.

Our aim is to mobilize insights from both perspectives to better examine persistence and change. To make progress on these questions, we outline an agenda to

study diffusion and institutionalization in terms of the objects, subjects, and settings through which each process takes place.

Objects that Spread or Stick

Specifying the object that spreads and sticks provides the basis for disentangling how diffusion and institutionalization may proceed separately or jointly. An important first step is to identify clearly the practice or structure that is diffusing and that which is institutionalizing.

For example, *the institutionalization of one thing may affect the rate and direction of the diffusion of something else*. Garvia (2007) demonstrates how the institutionalization of syndication explains the uneven diffusion of lottery play within and across European countries. In Spain, syndication was legally authorized in a way that linked culturally patterned activities, such as gift giving at Christmas, and frames that were concurrently directed toward private exchange. The institutionalization of syndicate play into the existing legal and social fabric of Spanish life permitted the mass diffusion of lottery participation.

The same sequence may occur in reverse: *The diffusion of one thing facilitates the institutionalization of something else*. Fads such as streaking on college campuses in the 1970s prompted schools to establish structures to maintain order. On a broader scale, the spread of activism as a form of civic engagement facilitates the institutionalization of regulatory structures through disparate channels, such as law or voluntary self-regulation in different organizational sectors (Schneiberg and Lounsbury 2008). Such cases explain situations where a diffusing practice eventually fails and is replaced. The spread of managerial fads facilitated the institutionalization of an organizational niche (Abrahamson and Fairchild 1999). Such practices themselves are never institutionalized; rather, the structure that generates and responds to the discourse is institutionalized.

Furthermore, diffusion and institutionalization of the same object may proceed sequentially. Tolbert and Zucker (1983) demonstrated that early-twentieth-century civil service reforms spread much more rapidly in cities where there were state-level mandates than in places with no state-level authorization. The Progressive Era also sparked a perceptual change in city government from a political spoils system to a corporation, further fueling the passage of civil service legislation. The institutionalization of civil service reform through law and cultural sources dramatically recast the prospects for its own diffusion.

Finally, diffusion and institutionalization processes with the same object may be mutually reinforcing. These cases entail situations where the spread of an object reflects institutionalization of that same object. For example, Briscoe and Safford (2008) show how public and covert activism prompted the adoption of domestic partner benefits by U.S. corporations, which coincided with changes in legislation. The early adoption of such programs by activist-resistant organizations simultaneously directed attention toward the issue and dampened contentious opposition. Diffusion operated like an interruption of existing expectations and structures, providing a “strong cue that the practice has shed the polarizing rhetoric of activist contention,” rendering other organizations more susceptible, and also amplifying the effects of proponents within organizations.

Subjects Who Adopt, Influence, or Abandon

We have discussed the role of prior and potential adopters in diffusion and institutionalization. Examining how practices and structures disappear (i.e., are abandoned

or extinguished) also sharpens the distinction between the two. For example, internal triggering conditions of performance failure may cause organizations to disconnect existing frames from their practices (Strang and Sine 2001), or conceptions of the limits of the state may stimulate managers to retheorize government mandates into important functions for internal efficiency (Dobbin and Sutton 1998). For diffusion, abandonment conjures an image of dropping, whereas in institutionalization it reflects extinguishing. *Practices disappear in diffusion when the mechanisms that caused them to spread, such as contagion or theorizations of benefit and appropriateness, no longer reinforce them. Practices that disappear in institutionalization require extinguishing or isolation from the features that reproduce them.*

The impact of abandoning or extinguishing also generates divergent effects in diffusion and institutionalization. When fads are dropped, they have limited impact on the next fad; rather, they vacate a niche to be filled. In institutionalization, a fad becomes sticky and gains traction, affecting a host of related things. Some elements become encoded in law or organizational structures, as specialized departments develop. When established practices are abandoned, they leave residues, which can serve as the building blocks of further institutions (Meyer and Rowan 1977; Schneiberg 2007; Schneiberg and Lounsbury 2008). People who are left behind become proponents, demonstrating that their office or role has strategic benefits, or they generate ambiguity by reinterpreting legal mandates. Kelly's (2003) work on child care policies in organizations shows how human resource consultants reinterpreted legislation aimed at facilitating workplace child care to promote a larger repertoire of employee benefit funds. Similarly, new phenomena, like welfare reform or government bailouts, get overlaid on previously abandoned institutions. *Abandonment in diffusion can leave a slate clean for the adoption of alternatives, whereas practices that have been institutionalized and are extinguished leave residue.*

Social Setting or Field

Many studies lack an account of the properties of social settings through which something spreads or sticks, apart from case-specific ex post explanations. This limitation often leads to a mis-specification of institutionalization, either as a characteristic of the field through which something is introduced, or as an attribute of the object that flows or sticks.

Both diffusion and institutionalization research have emphasized different ways in which new practices correspond with features of the social setting into which they are introduced. Katz (1999) highlights the role of compatibility in the social and normative structure in diffusion. Strang and Sine (2001) emphasize the degree of alignment among the regulatory, cognitive, and normative elements of institutions as central aspects of susceptibility to institutionalization and change. Disalignment provides opportunities for political contest or the mobilization of groups for their own ends (Friedland and Alford 1991). Alignment affords stability when the authority structures are congruent among disparate social domains (Ansari et al. 2010; Eckstein 1961; Kennedy and Fiss 2009; Stinchcombe 1968). *Alignment in diffusion increases susceptibility to adoption, whereas alignment in institutionalization decreases it.*

Fields vary on several dimensions. They may display different degrees of structuration, or how social relations among individuals and organizations are ordered in time and space (Barley and Tolbert 1997; DiMaggio and Powell 1983; Giddens 1984). Under conditions of high structuration, cultural, normative, and regulatory

links are increased, making information flows greater. For diffusion, the impact of postadoption behavior under such conditions is likely to increase, prompting collective action by adopters such as establishing standard-setting organizations that further a practice's institutionalization (Sahlin-Andersson and Engwall 2003).

Fields may differ processually, most notably in the organization of production. Crane (1999) recounts how the fashion industry underwent a profound transformation, whereby production moved from highly centralized in one geographic locale (Paris) to decentralized among many countries. In the old system, fashions were produced for local consumption and styles diffused broadly. In the current system, the source of new fashion is integrated into cultural production systems that, although they are less centralized, are highly organized and operate under a strategic logic to maximize diffusion. The typical saturation of populations in traditional models of fads and fashions is replaced in this consumer-driven model by patterns of diffusion within particular social and demographic groups. As a result, fashion travels through multiple paths to various geographic locations and social strata.

Properties of fields may also mediate the likelihood of reproduction and reinforcement. Clemens and Cook (1999) underscore the role of mutability in the degree to which institutional reproduction persists. Mutability reflects the distinction among rules that are directives ("musts"), rules that sanction ("must nots"), and rules that permit a range of possibilities ("mays") (Crawford and Ostrom 1995). Such qualitative differences in authority shape the repertoire of what spreads, what does not, and which features are most likely to vary in form. For example, Abrahamson and Fairchild (1999) show how TQM came and went cyclically as a managerial fashion, replacing what came before, and eventually replaced by something else. The niche that the authors describe as a core feature of rationalized firms is a "must," whereas the form that it takes is a matter of theorizing a solution to a problem. Feedback in such cases manifests as information that reinforces this causal linkage. Mutability resides in the niche, rather than the object of what diffuses. TQM is thus understood as a managerial fashion that diffused from a higher-order institutionalized structure that persisted beyond its technical requirements. In contrast, grievance procedures that became institutionalized as a response to EEO law transformed diachronically from a "may" rule to a "must." Lottery play that became institutionalized in Spain shifted from a "must not" to a "may" rule. In each case, rules that determined the reproduction of a practice were transformed, not only in substance, but also in the categorical degree of mutability. *Thus in diffusion, the form of mutability (i.e., must, must not, or may types of rules) will determine whether a practice takes hold or not. In institutionalization, the form of mutability is most likely to shift as a practice takes hold and becomes self-reinforcing.*

CONCLUSION

Diffusion and institutionalization are core ideas in organizational sociology, as both processes unfold at the intersection of relations and structures and are central to analyses of persistence and change. But as Moody and White (2003) observe: "Ubiquity, however, does not equal theoretical consistency" (2003:104). We have argued that the two ideas are often confounded, leading to theoretical and methodological biases in ways that hinder the development of generalizable arguments. Katz (1999) emphasized the lack of abstractions that cut across empirical cases of diffusion as well as the lack of generality across disciplines such as epidemiology, economics, sociology, geography, and communication studies. In his view, advances in theory have

become “paralyzed” because of the absence of a disciplinary custodian and a common language. Toward this end, we address generalizable dimensions of diffusion and institutionalization, emphasizing their distinct qualities and mutual contributions.

Many aspects of the conflation of these two processes and outcomes link to the methodological challenges inherent in the “theory-method” package that is commonly associated with sociological research (Schneiberg and Clemens 2006). Numerous scholars have called for cross-setting comparison of the diffusion of the same object (Denrell and Kovacs 2008; Strang and Soule 1998). We add, however, that analyses that (1) specifically compare reproduction processes in institutionalization with reinforcement mechanisms in diffusion and (2) make sure not to confound institutional effects with institutionalization will provide a stronger set of criteria for theoretical case selection as opposed to ex post identification of successful settings.

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