

Creating and Breaking Paths in Organizational Culture: A Cognitive-Evolutionary Perspective

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Abstract

I discuss path dependence in organizational culture as an evolutionary process that is driven by a continuous stream of new variations, many of which lead to dead ends but are nevertheless important because they affect the fate of those variations that survive to the future. I conceptualize this process at the micro-level of ideas in terms of changes in the distribution of ideas in populations and environments in which ideas compete for human attention. For illustrative purposes I present a case study of an organizational project embedded in a "culture of creativity." The findings indicate a process of path formation that is driven by competition among similar and different ideas, with variations in the timing and duration of combinations of ideas, and with outcomes that are neither unidirectional nor predictable.

Keywords: Path dependence, evolution, cognition, ideas, organizational culture

Introduction

The concept of path dependence is often used in the organizational literature to predict what is likely to happen in the future based on what happened in the past. Researchers tend to highlight those aspects of organizations that indicate or produce constraint and convergence (for a recent review of this literature, see Sydow et al., 2009). They focus on self-reinforcing loops, rooted in control structures, shared mindsets, the search for best practices, and so forth, which limit opportunities and incentives for individuals to take alternative courses of action, leading to lock-in. The likely outcome of self-reinforcing mechanisms is an organizational culture that replicates itself over time and is difficult to break.

Many studies of organizational culture conform to this view. For example, studies taking the integration approach portray culture as a tightly coupled web of beliefs and practices (for a review,

see Martin, 2002). In this view, new information is processed in line with existing information, embedded in structures that promote cultural consistence and coherence. Explanations for this phenomenon include cognitive concepts such as escalating commitment and group think (Sorensen, 2002), as well as institutional pressures towards reliability and accountability (Johnson, 2007). This line of thinking lies in the tradition in cultural sociology which views culture as a "latent variable" (DiMaggio, 1997), shaping attitudes, dominating action, and creating a future based on decisions made in the past.

An alternative view of culture focuses more on variabilities and ambiguities in organizational behavior. Even in the most hierarchically managed organization, the numerous variables surrounding individual and group behavior cannot be designed out (Collins, 1998) and unanticipated events are an ever-present feature (Kaufman, 1985). This view of organizational culture is consistent with the more recent tradition in cultural sociology which interprets culture as a "toolkit" (Swidler, 2002) of heterogeneous elements that individuals draw on flexibly to solve the problems of everyday life and to avoid irreversible outcomes.

In this paper I explore path dependence in organizational culture as a phenomenon that includes not only convergence but also the creation of new variations, even in the later stages of the process of path formation. I use a cognitive-evolutionary perspective, focusing on changes over time in the distribution of ideas in populations of varying combinations of similar but non-identical ideas. The evolutionary view is highly appropriate to the study of path dependence because, in contrast to many other approaches, it looks to the future and pays attention to developments "as they happen." The interest in *cognition* reflects the need to understand the micro-foundations of path dependence in order to make explicit the constituent elements of organizational processes that may or may not lead to lock-in, depending on how the elements are combined in changing environments (Fauconnier & Turner, 1998). To explicate the *evolutionary* momentum of organizational culture (Campbell, 1960), one must begin with the units that are closest to the process of path formation, namely the ideas and the connections between them which give meaning to culture. Human agents are actively, albeit not always consciously, involved in this process, by repeating existing ideas, proposing new ones, and combining them with other ideas in the organization's cultural repertoire.

In the next section of this paper I outline the key concepts and arguments in the cognitive-evolutionary approach to path dependence in organizational culture. I discuss ideas as cultural variants, populations of ideas as the unit of analysis, and environment as the resource space which sets limits to idea generation. I then illustrate the theoretical arguments with a case study of the evolution of a creativity project in a web-design company. The case shows that opportunities for breaking existing paths and creating new ones depend on the presence of a selection environment that supports competition between ideas and leaves room for the emergence of new variations in combinations of ideas. I then discuss the implication of the cognitive-evolutionary approach for viewing path dependence as a source of competitive advantage, and I outline some of the methodological challenges for researchers taking a cognitive-evolutionary perspective on path dependence.

The Cognitive-Evolutionary Perspective

Most definitions of organizational culture refer to cognitive entities, such as ideas or modes of thought as the quintessential content of culture. Culture means "talking about the importance for people of symbolism – of rituals, myths, stories, and legends – and about the interpretation of events, ideas, and experiences ..." (Frost et al., 1985, p.17). Ideas provide a critical linkage between mental processes and organizational distinctions (Freeman, 1992). Although ideas are often mentioned in empirical studies of organizational culture, either as constitutive elements of understandings or as a resource in the generative processes that shape meanings (Smircich, 1983), little attention is paid to ideas as an object of inquiry in their own right. Similarly, the growing interest in the cognitive micro-foundations of higher-level organizational entities has, so far, not led to systematic studies of ideas as units of selection.¹ I suggest that ideas constitute important cultural variants in the evolution of path dependence, affected by and shaping the course of change in the organizational entity in which they are embedded.

Ideas as Cultural Variants

Evolutionary theorists in various social science fields have proposed ideas as units of differential selection and transmission (Sperber, 1996; Richerson & Boyd, 2005).² An idea can be considered an informational unit that is sufficiently small and cohesive to operate as a "distinct memorable unit" (Dennett, 1995, p.344). An idea can be stored and replicated independently from the person who initiated it. It can survive in memos, stories, rules, rituals, and minutes of meetings, such as the documents that I use in the case study below. For an idea to serve as a unit of evolutionary replication (Hull, 1988) all that is required is that it can be recognized as a distinct piece of information and that it can be passed on to other people. Whether it *will* be passed on depends on people's cognitive capacity and the cultural environment in which it exists (Durham, 1991).

Ideas occupy a special place in several literatures. In the sociology of ideas, they are seen not as simple reflexes of social conditions but as ontological entities with the potential power to influence behavior, in interaction with competing ideas and local circumstances (Camic & Gross, 2001). In the sociology of knowledge, ideas constitute elements in a cultural process by which some ideas emerge and spread, while others are actively suppressed (Swidler, 2002). In economic geography, local innovation systems are described as successful if firms can draw new ideas from a variety of sources (Martin & Simmie, 2008). In evolutionary economics, ideas constitute the raw material of economic change (Nelson, 2006). And in political economy, ideas are sometimes treated as entities with self-replicating properties, with the potential to change the path of institutional development (Campbell, 1998).

Several previous studies have taken a micro-level evolutionary perspective on organizational culture, characterizing culture as an ecology of "small" elements of replication and transmission (Weeks & Galunic, 2003). For example, Schulz (1998) modeled the evolution of a university's culture as the rate at which new ideas regard-

ing faculty and student rules are created. Harrison and Carroll (1991) studied cultural change as a transmission process, driven by the reproduction of ideas about how to socialize new organizational members. Others have suggested that ideas can be powerful enough to force organizations off the existing path, as in the case of ideologically centrist newspapers outcompeting ideologically extremist newspapers in the interwar years in Austria (Barnett & Woywode, 2004). And in research on organizational creativity, ideas are seen as central to the many momentary opportunities and impediments that creative workers experience "on the way" to the final product (Hargadon & Bechky, 2006). The creative process is not unilinear in the sense that a single category of imagination will fully determine any number of intersecting differences between the various ideas involved.

The weakness of many studies of organizational culture is that they focus on outcomes, trying to explain the outcome of particular practices by working backwards to preceding situations that are assumed to have led to the observed results. For example, individuals are surveyed about their evaluation of events through which they constructed an image of the organization's culture, such as whether the culture fosters creativity because it supports professionalism, or thwarts creativity because it instills fear. The outcome-oriented approach to explanation normally follows a variance-based logic and searches for statistical regularities in a representative sample of cases, while ignoring temporal relations. Trying to understand an organization's current culture based only on attributes that have survived to the point of observation is problematic. Causally important actors may have left the organization or relevant organizational records from the past may have been lost, leading to a selectivity bias in available samples. Outcome-oriented research designs are prone to causal attribution errors, especially in cases where unknown future events create an uncertain selection environment and multiple evolutionary paths are possible (Aldrich, 2001). For example, in innovation projects in the pharmaceutical industry, attempts to deduce knowledge of a safe medication from the specification of desired effects are normally doomed to failure (Nightingale, 2000). There are many possible pathways connecting an idea to a particular outcome. Which path is worth taking requires knowledge that is available only in retrospect. Outcome-oriented research designs miss the numerous ideas that drive the innovation process, including ideas that are eventually forgotten or given up.

Evolving Populations of Ideas

Many ideas have no particular merit by themselves but acquire value only in combination with other ideas. For example, the idea of leftism in the Viennese newspaper population in the 1930s obtained its meaning specific to this time and location in association with ideas about political movements related to Zionistic Jewish interests and Czech socialist ideology (Barnett & Woywode, 2004). In this case, the developmental path of newspapers was driven by competition between ideas belonging to immediately adjacent ideologies. Empirical generalizations from knowledge of outcomes, such as which type of newspaper has survived, are difficult to obtain if researchers draw their observations from incomplete populations of the ideas, ignoring seemingly marginal ideas and ideas that failed to attract sustained attention.

In an evolutionary analysis, the focus is not on individual ideas but on populations of similar and dissimilar ideas. From an evolutionary perspective, ideas are members of the same population not because they are similar but because they are related in some way.³ For evolution to be possible there needs to be sufficient variation among the units within a population with respect to selectively important traits. In organizational culture these traits might relate to an idea's authenticity or novelty. The shape of idea populations in a particular domain, such as the organizational brainstorming meetings I discuss below, can be interpreted as the result of a selection process in which ideas not well suited to a particular situation have been discarded and better adapted ideas have been retained.

Time, location, and purpose are important aspects defining the boundary around a population of ideas. For example, an organizational project set up to create innovative products, such as the project described in the case study below, has a well-defined goal with a clear beginning and end, and it brings together individuals in physically close and emotionally intense vicinity (Sutton & Hargadon, 1996). In the highly constrained setting of a project of this nature, it is likely that new variations in ideas emerge endogenously and that a narrow goal focus will intensify the effect that particular ideas have on each other's survival chances. In other contexts, idea populations evolve also in response to exogenous forces, as in the case of Viennese newspapers whose life chances in the 1930s were influenced by the fate of political parties with which they were affiliated (Barnett & Woywode, 2004).

Selection Environment

The likelihood of ideas getting transmitted depends on the degree to which the environment in which they compete for human attention is receptive to them (Berger & Heath, 2005). Some ideas may be particularly important, original, or memorable, but if they are not sufficiently cued by the environment they will not be retrieved and will not spread. The cues that would allow people to recall an idea might disappear as the environment changes. For example, the criteria defining what is considered a legitimate organizational practice might shift because the organization enters a new market or moves to a different location, causing ideas to remain dormant until events in the environment lead to their recollection, as in the case of a firm with a reputation based on these criteria entering the local community (Davis & Greve, 1997). Alternatively, ideas might spread because they are imitated in different environments, as in the case of educational practices spreading rapidly across regions with no connection among the actors (Strang & Meyer, 1993). The evolutionary perspective also alerts us to the possibility that internal selection regimes are completely decoupled from external forces. For example, to the extent that an organization's emergent culture is contested or unfocused, it is very difficult to predict which of many possible interpretations and understandings will prevail in the future.

Changes in human attention often depend on small differences in the co-occurrence of several events, and major changes in selection environments can alter the terms on which cues become salient. Small ideas can mushroom into large mindsets with big consequences, depending on the presence of environmental factors triggering

attention (Berger & Heath, 2005). From an evolutionary perspective, no assumptions need to be made about the quality of an idea, such as whether it is "interesting" or "novel" (Sperber, 1996). All that is required is that there are ideas with different content, that they can compete for human attention, and that individuals are capable of passing them on, however imperfectly, given cognitive limitations and social biases. Which ideas are transmitted depends on fitness criteria and processes that can vary greatly across contexts, such as whether the "coop idea" in business is promoted in times of economic prosperity or stress (Staber, 1989). Context is critical, affecting people's interpretation of local expectations.

Organizations are rarely well-integrated cultural entities. Their identities are more often than not built on a contestable repertoire of ideas, which is sometimes viewed as a source of conflict and inertia, and sometimes seen as a source of innovation and change. The latter view is particularly prominent in organizations with cultures intended to stimulate creativity (Moultrie & Young, 2009). These organizations are an excellent research setting to explore how competition between ideas is implicated in the process of path formation and breaking (Hargadon & Bechky, 2006). The purpose of the illustrative case study below is to give practical focus to the theoretical arguments developed above regarding the form of path dependence in evolving idea populations.

Empirical Illustration

Organizations in the "creative sector" (Amin & Roberts, 2008) provide a rich setting in which to study path dependence in organizational culture. The generation of new ideas is central to organizations in this sector. Investigators often describe the creative process in literature, film making, advertising, product design, and so forth as starting with "good ideas" (Perry-Smith, 2006) that are replicated faithfully and reinforced in path-dependent ways. However, good ideas are very rare or may only be recognized as good in retrospect. Engagement in the creative process requires imagination and openness to disparate ideas, many of which turn out to be useless. Jazz musicians, for example, describe their work as the "relentless pursuit of learning and disciplined imagination ... surprising themselves and others with spontaneous, unrehearsed ideas" (Barrett, 1998, p.606). And novelists characterize creative writing as a process that "feeds what's hypothetical or imagined into what's inspired and controlled by recollection, and how what's recollected spawns the overall fantasy" (Roth, 2001, p.127). Many ideas are mundane and part of everyday activity but may figure prominently as elements of a larger bundle of ideas interacting in populations bounded by time, location, or purpose.

Since every engagement with creativity is temporally and contextually provisional, it is difficult to predict an outcome merely from what had come before. Film production, for example, represents a series of steps and stages, from script writing to final editing, with divergent possibilities at each step, and involving a range of different individuals (Perretti & Negro, 2007). The evolution of idea populations may not follow a unilinear and unidirectional sequence in combinations of ideas, as explained by Woody Allen:

"I thought it would be a funny idea to do a story about a writer who you learned about through a series of stories in the film. Then I had to give him a life, which I was making up to fit the ideas for the different stories I had. Because I had the ideas for these stories before I wrote the movie. So I constructed it almost backwards from the stories. I made his character one that would enable me to get to those stories" (Björkman, 2004, p.323).

The principal aim of the illustrative case study below is not to test formal hypotheses about the process by which ideas arise, take hold, and potentially produce an outcome that might be considered innovative or path breaking. Rather, the intention is to show stylistically the life history of a sample of ideas that evolved across a series of brainstorming sessions in an organization with a culture that supports creativity. Comprehensive studies to explore path dependence in a population of ideas are notoriously difficult because of the inability to conduct controlled experiments in heterogeneous social systems like organizations and the often shifting engagements and commitments of human actors. The present study is an attempt to deal with these difficulties in the narrowly defined context of a creative design project in the multi-media sector, without claiming representativeness or completeness.

Research Site

The multi-media sector comprises a range of overlapping industries, combining the "old" media of television and film with computer-driven technologies that manipulate text, sound, and images. The work environment of people like advertisers and graphic designers includes rapidly changing technologies, close contact with colleagues and customers, and a focus on personal expressiveness and creative authorship (Pratt, 2000). The prototypical multi-media organization is a setting in which many different skills and perspectives are brought to bear on products as they go through the process of conception, elaboration, and final embellishment. These features make multi-media organizations a particularly rich research site to explore path creation and breaking.

The firm in which I conducted this case study was one of seven companies selected for a pilot study for a larger project on changing identities of professions and organizations in creative industries. The firm is a web design company, founded in 1998 and located in Germany. At the time of data collection in the summer of 2007, the firm had five full-time employees and six freelance workers, performing a variety of tasks related to interactive design, programming, information architecture, and advertising.

Data Collection

Data collection involved personal interviews with the owner/manager and two of the full-time employees. The interviews began with a promise of anonymity and an explanation of the researcher's interest in exploring the self-conception of creative workers. Following that, the interview flowed according to whatever topic the individuals wanted to talk about, going along with their line of thought (Alvesson, 2003) but,

when necessary, forcing the conversation back to the topic of identity and creativity. At the request of the respondents, the interviews were not tape-recorded but I was allowed to take extensive notes, which I transcribed verbatim immediately after the interviews.

I also observed five (3rd through 7th) of the eleven brainstorming sessions that were held over a five-week period. Brainstorming was a method the firm had been using during the previous three years to generate new ideas for client projects. At the time of this study, the firm had just begun a web design project for a publisher of educational books. In each brainstorming session, minutes were taken by one of the participants to record all ideas that were discussed. I was given access to the minutes of the first eight brainstorming sessions. These sessions generated a total of 89 ideas for designing the client's website. With the notes I had taken during the sessions I attended I was able to crosscheck the ideas recorded in the minutes. The agreement between my list of ideas and the ideas recorded in the minutes exceeded 95 percent in all cases.

The minutes provide an operationalization of ideas in line with the goal of ethnographic research, namely to generate insights into the concrete world of participants as expressed by the actors themselves. In decoding the text in the minutes, I took a conversational-discursive stance (Watkins & Swidler, 2009), defining an informational unit as an idea when the participants label it as such and give it plausibility by expressing it in public. Because of the generality of many ideas, it is not very useful to search for a definition of boundaries around ideas that is workable in all contexts. It seems more appropriate to define ideas idiosyncratically in the specific settings in which they are studied and to ask whether the actors themselves recognize an idea as a distinct entity. It was clear from the interviews, field notes, and minutes that the participants experienced no ambiguity concerning the distinctiveness of the ideas they discussed.

Empirical Observations: The Idea of Humor and Related Ideas

For purposes of illustration, I focus on humor, a concept that has received considerable attention in research on organizational culture (e.g. Taylor & Bain, 2003). Humor was first introduced as an idea in the third session, discussed at some length in the following sessions, and dropped in the seventh meeting, when the participants agreed that, as one of them commented, "it may really be fun to laugh, and we did have our laugh, but this should not be *the* way to define a website of a serious publisher. Let's forget this idea." Figure 1 offers a stylistic representation of the evolution of an idea population centered on humor. It shows the range of ideas that were mentioned explicitly in connection with humor, as well as the sessions in which these ideas were introduced and later dropped.

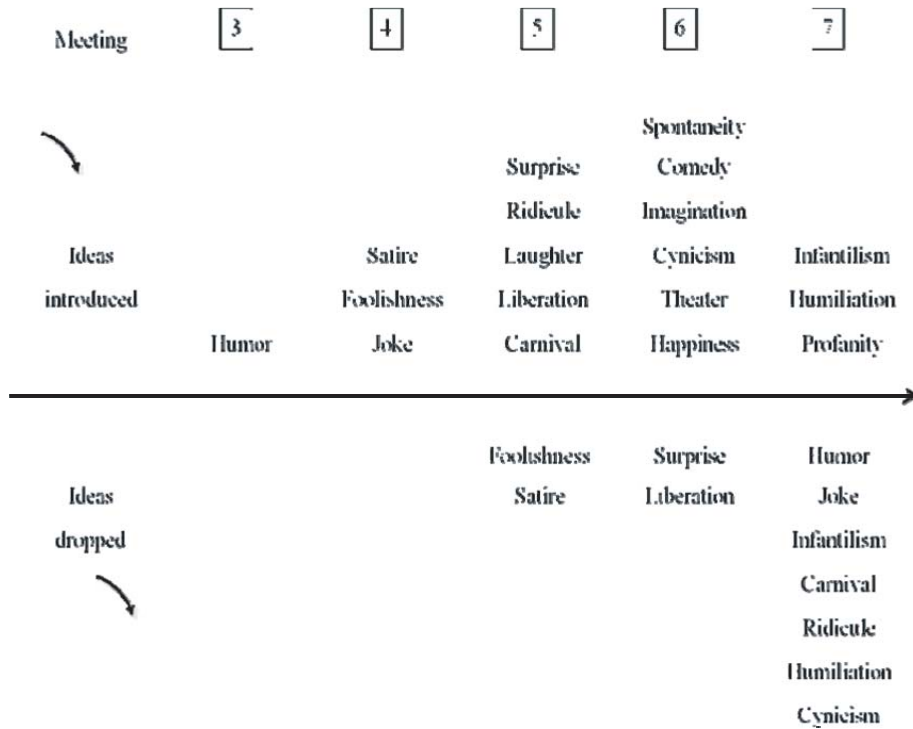


Figure 1. Humor and Related Ideas Entering and Leaving the Population of Ideas Discussed in Sessions 3 Through 7.

The idea of humor became a topic of extended discussion in the fourth session, when participants began to contemplate humor as a promotional strategy (Greatbatch & Clark, 2003). Some participants suggested that jokes can provide people with the relief necessary in a "stress-laden society like ours." Foolishness was considered by the participants as a "necessary add-on for [name of client] who is in the educational business where it's really okay to make mistakes." Participants elaborated further in the fifth session, discussing surprise and laughter as ideas for the client's website. "Laughter is a great idea," one of them said. Another participant suggested, "I think we should add to humor an element of surprise, to shake them out of complacency ... to perhaps shock them a bit." Several participants were keen on the idea of carnival, which one of them saw as "a great way to learn." The idea of carnival was further developed in the sixth session when it was placed in the context of "theater," which some participants linked to "happiness" and others linked to "cynicism" as ideas about "what theater really means."

In the context of idea generation, path dependence would mean that the ideas introduced early in the series of brainstorming sessions influenced the ideas that were raised subsequently. Subsequent ideas thus bear a strong resemblance to earlier ideas, and potentially competing ideas never catch up in terms of attracting much attention. The data available for this study suggest that there was some convergence towards

humor as a focal idea around which the client's website could be built. Convergence was evident in the proliferation of ideas related to humor up to session 6, as opposed to the number of other ideas (not shown in Figure 1). However, convergence was not complete and not irreversible. The idea of humor produced no lasting imprinting effects. It was only one of many ideas that were discussed, in a population that was fed by a continuous stream of new ideas. Many of these ideas (e.g. diversity) led nowhere and were later dropped, while others (e.g. science) initiated idea generation in new directions. The participants eventually dropped the idea of humor, as well as most of the related ideas, when they began discussing the possibility that humor would be perceived as "infantile" and inappropriate for a client that operates in the "serious business of education." One of them commented that "I don't think we want to be seen as little kids joking around, playing theater. Some people find humiliation humorous. I don't." He connected the idea of infantilism to Freud's (1960) notion of humor as a form of rebellion against reason when he said that "good old Sigmund would have had a laugh about what we are doing here, fooling around like immature children." Another participant brought up the idea of profanity, asking, "Isn't it a bit profane to make a farce out of a website? Humor isn't such a great idea if it is sold as profanity." "Let's be good to Sigmund," another person added, "and drop this stupid idea of a carnival."

The project ended with participants resurrecting in the seventh session the idea of "child's play" which had been raised first in the second session. According to the interviewees, this idea gained prominence towards the end of the project because it was now seen in light of some of the other ideas that had been rejected previously but were now brought up again, such as "playfulness," "fun learning," and "childlike curiosity." The idea of "infantilism" was dropped in the seventh session as an idea linked to "humor," but it gave new meaning to the idea of "child's play" when it was retrieved in this session. One interviewee commented that "we now thought differently about child's play, but only after we had gone through all these ideas about humor." His colleague added that "We didn't think of child's play as something particularly humorous, but the whole discussion of humor being perceived as infantile brought us to the idea that education could be seen as child's play."

These comments regarding new combinations of ideas can be interpreted from an evolutionary perspective. Evolution is about interacting and replicating populations of variable units rather than singular units. While the idea of child's play remained the same across the sessions, in the sense that it displayed unitary stability, it acquired a new meaning in combination with the new ideas that were introduced in the population. The analytical focus on evolving populations offers a clue to the sources of both similarity and variation between ideas, and thus the possibility and timing of breaking existing paths of development and creating different ones. The interviewees suggested that "good ideas" made sense only in a larger population of similar and dissimilar ideas. As one of them commented:

"The other aspect [of good ideas] is that ideas rarely stand alone. For good ideas you need lots of sub-ideas. For a good book you need to have not only a good idea for a plot but also ideas for characters, settings, etc., quite similar to experi-

ments where you have to be able to think in all kinds of directions and where you never know how things will end."

The other interviewee noted the sequencing of ideas, suggesting that "good ideas don't follow each other independently. Good ideas always come from somewhere." Idea generation is a dynamic process in which change can involve long periods of stasis punctuated by sudden interruptions. Some ideas, such as the idea of child's play, can remain latent for extended periods before they are resurrected. Others come and go, depending on cues in the social environment and the presence of related ideas. Since the replication of ideas increases the frequency of an idea faster than the longevity of an organizational project that contains the idea, one should not be surprised to observe projects that never get off ground or are terminated before they produce the intended results. Evolution does not always lead to the best possible outcomes. It may merely lead to the survival of the ideas best able to replicate, for reasons that may have nothing to do with their inherent quality. As one of the interviewees noted, "We had brainstorming sessions before where you really have to wonder how people come up with their ideas. What they suggested had really nothing to do with what we wanted to achieve, but somehow the ideas stuck in people's minds." To understand the path-breaking potential of an idea requires more than analyzing the content of the idea, such as whether it is perceived as radical or intelligent. It requires an understanding of the changing distributional pattern of ideas in the local domain of similar and dissimilar ideas, which determines whether an idea *becomes* radical or intelligent. Without the extended discussion of ideas connected to humor, the actors in this case may never have settled on child's play as the focal idea in the end product of the project.

The findings of this case study also suggest that the ideas observed did not emerge in a social vacuum. The creation and breaking of paths is not the result of the random introduction of ideas by people acting autonomously. Ideas are always embedded in a social context that is already made and includes individuals who incorporate ideas in something manifest, such as an innovative product, based on what they already know. Ideas require interpreting minds and communicating hosts who are themselves embedded in a system of discourse-shaping social interaction (Eliasoph & Lichterman, 2003). For example, the fate of an idea may be a function of the position of the person who espouses it. In the minds of some of the session participants, the credibility of an idea was closely tied to the credibility of the person expressing it. As one of the interviewees remarked:

"I remember, when Martin first argued that the website should look like a roll of toilet paper, he was ridiculed by the rest of us. No one took him seriously. Well, that's because this guy doesn't have any credibility around here, really. It was something like, well, he's just saying that because he's not a regular around here. Because he thinks he's only here off and on, he can put up any stupid idea!"

In such cases, there is a close relationship between the social structure of the group of participants and the mental representation of that structure in terms of cultural operations. This representation may itself be generated by social categorizations, such as whether the individual is considered a regular member of the group. The qual-

ity of organizational culture is critical to the way representations of ideas unfold over time.

Discussion

Much prior research on organizational path dependence has taken an outcome-oriented approach, often mentioning ideas as elements in organizations' cultural repertoires but overlooking the question of their origin and evolution. To add precision to the cognitive and cultural dimension of path dependence, I proposed a micro-level evolutionary perspective, with a view to ideas as units of replication and transmission, in a cultural environment in which they compete for human attention. The evolutionary perspective examines competition between ideas at the population level. It suggests that if we want to understand the process of path formation, including possibilities of path breaking, we need to study the competitive processes driving populations of ideas, rather than assume *a priori* that such populations tend towards unity and coherence.

The case presented above describes an organizational project aimed at developing a "good idea" but without using the self-reinforcing mechanisms one normally finds in path-dependent processes. The project was embedded in an organizational culture that encourages experimentation and tolerates mistakes. Whether this is a special case (for example, of creativity) or a general phenomenon (for example, of knowledge creation) is an empirical question. It seems reasonable to assume that path-dependent processes always contain elements of variation, even in the later stages of path formation (Sydow et al., 2009). However, this variation must be inconsequential for path dependence. Otherwise one could not speak of lock-ins as the inevitable outcome and definitional element of path dependence. Actors may vary in interpretations and may pursue different options, but if they were free to change course at will to achieve a different future, one could not call the process path-dependent.

Once we acknowledge the possibility that organizational culture is fragmented and contestable, it becomes important to focus attention on the relations between cultural variants and to study the variations that these relations create. Ideas are important cultural variants. They are the constitutive elements of entities such as symbolic artifacts, technologies, and material products, and they are directly implicated in the process generating variations "on the way" to these entities. To the extent that ideas can vary somewhat independently of one another, they are available for selective retention. The evolutionary process influences the course of path dependence by their selective effects on the ideas and bundles of ideas embedded in culture and other entities. The future outcomes of the selection of "good ideas" in the current environment are not necessarily the "best" ones or the "fittest" ones conceivable.

The findings of this case study have implications for viewing path dependence not as a source of inefficiency, which is a baseline argument in much of the literature on organizational path dependence (Sydow et al., 2009), but as a potential source of competitive advantage. An organization's culture may contribute to sustained competitiveness if it contains attributes that are so ambiguous, for example because they are grounded in a unique history or require unique interpretations, that they are difficult to

replicate elsewhere (Barney, 1986). Brainstorming meetings that include participants from different units in an organization are an example of dynamic environments in which new combinations of ideas are produced that are difficult for outsiders to understand and imitate. Because it is often easier for individuals to explore opportunities in the neighborhood of existing knowledge, many organizations tend towards consistency and coherence. By contrast, organizations with a culture supportive of new ideas, many of which have no obvious consequences or are "causally ambiguous" in their links to other ideas, may be prepared to accept a certain degree of inefficiency. They hope to benefit from the complexity of a culture which competitors will find difficult to understand and imitate. Successful novelists like Philip Roth know this competitive strategy all too well when they characterize the writing process as being *deliberately* "out of focus" in order to create opportunities for ambiguity that can take the producer and reader in multiple directions: "The idea, in part, is to keep alive fictions that draw their energy from different sources, so that when circumstances combine to rouse one or another of the sleeping beasts, there is a carcass around for it to feed on" (Roth, 2001, p.31).

While useful for understanding the sources and outcomes of variations, the cognitive-evolutionary approach has limitations that require a number of difficult methodological choices to be made. First, researchers need to be clear about which ideas and actors to include in the analysis in order to avoid a false representation of consensus or divergence. This requires sufficient *a priori* understanding of the kinds of ideas to be included in a given population and environment. To model the evolution of an "idea pool," one needs to specify this pool as internally cohesive and externally closed. The problem is that the boundary of an idea population is unlikely to be fixed in a dynamic environment in which resource demands are changing and there is pressure to depart from existing paths. Ideas can migrate across boundaries, as when an organization merges with another one or eliminates departmental boundaries. Population boundaries evolve with the migration patterns of the ideas constituting the population. The genealogical interactions between ideas do not normally break off neatly at ontologically given boundaries (Berryman, 2002).

A second and related difficulty concerns the practical necessity of focusing the analysis on a reasonably small number of ideas when studying their "career" over an extended period of time. Many of the concepts studied in research on organizational culture are empirically quite broad, such as creativity or cultural capital. Ignoring the larger context, which includes ideas in neighboring domains, increases the risk of overlooking the possibility that the actors had different meanings in mind, depending on where they "were coming from." By studying a large number of ideas in a broad domain, in an attempt to capture all existing and potential paths, one risks blurring meaningful population boundaries. And by focusing on an overly narrow population of ideas, the investigator may miss important parts of the overall story.

Third, when identifying ideas for analysis, researchers need to make choices about coding the available information, which requires an understanding of different points of view. It makes a difference if one takes the perspective of, say the participants of a creative design project or the clients of this project, when evaluating whether new ground has been broken. The investigator's knowledge about ideas also

needs to be supplemented with knowledge about human actors' capacity to infer and pass on information correctly, and this requires knowledge about social and cultural competencies present in a given domain. Organizational culture consists of more than a population of ideas. There is also interpretation and action, and to the extent that these additional elements of culture are error prone, they introduce the variation that is necessary for cultural evolution to be possible and for paths to be broken.

Conclusion

The evolutionary analysis of ideas might be promising research territory that can lead to new insights about the nature of path dependence. Organizational cultures evolve because populations of ideas underlying rules, customs, styles, and the like can change in structure and meaning through the addition and removal of particular ideas. By studying causes as flowing up from actors and from the inside out rather than down from the context and into the organization, the cognitive-evolutionary perspective helps understand path dependence in a way that does not force an infinite regress to higher-level contexts. By making connections between ideas the center of analysis, one shifts the attention from "main effects" to "interaction effects", revealing culture as a contested space of interrelated "small" elements.

Based on this understanding, it is possible to develop testable hypotheses related to questions such as whether the rate of new idea creation is higher in environments that straddle different domains, or how the rate of idea removal from the system is affected by the prior history of an idea. An evolutionary analysis of populations of ideas can provide a step-by-step account of options, events, and paths taken and not taken in the construction of organizational culture – or some other entity. And by forcing the investigator to justify methodological choices with respect to which ideas and actors to include in the analysis, how to set boundaries of time and space, and how to code an idea, this perspective enables a more nuanced understanding of path construction with a view to the future rather than the past.

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Notes

1. Some studies examine ideas only indirectly, as elements of larger aggregates such as ideologies (Lamberg & Tikkanen, 2006), organizational capabilities (Jacobides, 2006), paradigms (Sterman & Wittenberg, 1999), and knowledge (Tschang & Szczypula, 2006).

2. For a somewhat different opinion on this, see Hodgson and Knudsen (2008).
3. In biology, population membership is determined by the reproductive interactions that obtain between organisms and the ensuing common descent (Hull, 1988).

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