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WHAT'S "NEW" ABOUT NEW FORMS OF ORGANIZING?

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In order to assess whether new theories are necessary to explain new forms of organizing or existing theories suffice, we must first specify exactly what makes a form of organizing "new." We propose clear criteria for making such an assessment and show how they are useful in assessing if and when new theories of organizing may truly be needed. We illustrate our arguments by contrasting forms of organizing often considered novel, such as Linux, Wikipedia, and Oticon, against their traditional counterparts. We conclude that even when there may be little that existing theory cannot explain about individual elements in these new forms of organizing, opportunities for new theorizing lie in understanding the bundles of co-occurring elements that seem to underlie them and why the same bundles occur in widely disparate organizations.

It has become common to lament that extant organization theories appear to have little of value to say about new and emerging forms of organizing. More than two decades ago Daft and Lewin expressed regret about the fact that the new forms of organizing they observed seemed "far removed from academic research" (1990: 1). A decade and a half later, Schoonhoven, Meyer, and Walsh (2005a,b) and Dunbar and Starbuck (2006) continued to be sufficiently troubled by the problem to ask for the development of new theories of organizing to replace our older theories, which were "inextricably rooted in bygone features of economic production" (Walsh, Meyer, & Schoonhoven, 2006: 661). More recently, Miller, Greenwood, and Prakash (2009) and Greenwood and Miller (2010) renewed the call for newer theories of organization design to respond to the novelty and diversity of contemporary forms of organizing. The consensus diagnosis seems to suggest that our existing theories of organizing are too rooted in a context that no longer corresponds to present day reality—and that the need of the hour is to craft new theories that better correspond to this new reality.

On the one hand, it can be argued that the cure for the ills caused by the excessive context dependence of past theories can hardly lie in building new theories that closely fit our current contexts; doing so would be merely a form of (un)planned obsolescence since today's contexts would inevitably become yesterday's. To illustrate this point, consider that when critics spoke of new organizational realities that remained unacknowledged by traditional theories of organization two decades ago, they were referring primarily to networked forms of organization, such as Thermo Electron or the Toyota supplier network (Daft & Lewin, 1990); today the complaint is usually made in terms of the limited

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representation of information technology (IT) and its catalytic role in organizing as evidenced by, say, Linux or Wikipedia (Zammuto, Griffith, Majchrzak, Dougherty, & Faraj, 2007). In this view, perhaps what we should aim for are general theories of organizing that explain and indeed predict the emergence of new forms, rather than remain specifically tied to current contexts.

On the other hand, the case has also been made that it is too ambitious for us at the present state of development of the field to hope for theories that are general enough to understand new forms of organizing across contexts (Davis & Marquis, 2005; Kilduff, Mehra, & Dunn, 2011). Rather than adjudicate between these points of view, in this article we propose that, regardless of whether one believes that new theories are necessary or unnecessary to understand the newer forms of organizing visible around us today, a meaningful debate between these viewpoints requires us to first answer an important antecedent question: *What, exactly, is a new form of organizing—and, in particular, what qualifies it as new*? Our primary goal in this article is to help develop an answer to this question.

We approach the problem by conceptualizing a *form of organizing* as a set of solutions to four universal problems that all organizations confront (which we will elaborate on later). A *novel* form of organizing is one that solves one or more of these problems in a new manner, *relative* to existing forms of organizing that have similar objectives. We believe that once we are able to precisely specify in this manner the nature of novelty in a form of organizing, we can turn to a careful consideration of whether a new theory of organizing is indeed necessary in light of the novelty uncovered, and perhaps outline the shape of such a theory.

To illustrate how this may be done, we consider a few examples of both established and relatively recent forms of organizing. These include stereotypical "traditional organizations"—as most business firms, government bureaucracies, and indeed nonprofit agencies are still organized today—but also some forms of organizing hailed as novel, such as Linux and Wikipedia. Furthermore, we consider changes within a single organization over time from a traditional to a novel form of organizing—Oticon. These illustrations are not meant to be an exhaustive list of new forms of organizing; our objective here is conceptual clarity rather than empirical validation, so these examples help primarily to explain our arguments rather than offer evidence for them. We conclude by noting how our approach to analyzing forms of organizing in terms of a set of universal underlying problems is useful for understanding deep structural similarities between apparently disparate organizations (also see, for example, Gersick, 1991), as well as for studying organizing as a problem-solving process.

WHAT IS A FORM OF ORGANIZING?

We draw on the conceptualization of an organization offered by March and Simon:

> Organizations are systems of coordinated action among individuals and groups whose preferences, information, interests or knowledge differ. Organization theories describe the delicate conversion of conflict into cooperation, the mobilization of resources and the coordination of effort that facilitate the joint survival of an organization and its members (1993: 2).

While other analysts have offered variants (e.g., Aldrich, 1979; Burton & Obel, 1984; Etzioni, 1964; Scott, 1998; Stinchcombe, 1965; Weick, 1969), their various conceptualizations of an organization have always preserved some common features; in essence, they portray an organization as (1) *a multiagent system* with (2) *identifiable boundaries* and (3) *system-level goals* (*purpose*) toward which (4) *the constituent agent's efforts are expected to make a contribution* (we use the terms *actor, agent,* and *individual* synonymously).

Each of the four elements in this definition is critical and reflects widely accepted conceptions of what kind of a system an organization is. First, the system in question must have more than a single agent. Second, the set of agents under consideration must be well identified through the definition of the organization's boundaries. The boundaries of an organization define membership and are complemented by rules for entry and exit into the organization. For business organizations such as firms, the boundaries can be sharply defined through asset ownership and employment contracts, which help define the zone of acceptance of employees (Simon, 1953) and provide freedom from adjudication by a court of law in many situations through the doctrine of forbearance (Williamson, 1985). The existence of a boundary does not,

of course, imply that organizations are closed systems; they may be quite amenable to the influence of the environment outside their boundaries, and vice versa (Scott, 1998).

Third, it should be possible to ascribe a goal to the system. Typically, the goal of an organization—even if defined simply in terms of continued existence—may be understood in terms of exploiting some form of gains from joint action that cannot be achieved by individual members acting in isolation. The goal may well be implicit, and even if explicit may not be identical to the goals of the constituent agents (Scott, 1998). For instance, conventional business firms have fairly explicitly stated goals, which typically include, quite prominently, the pursuit of profits. However, for most business organizations the goals of the employees and the organization diverge, because the overall goals of the organization may not directly appeal to its employees (Simon, 1951). Employees may not necessarily be motivated by producing the widgets that their department specializes in or may not necessarily care about the final goal of the company. Rather, employees may make contributions within a zone of indifference in return for inducements (Simon, 1955). Finally, it is worth noting that implicit goals for an organization may develop quite independently of its explicit goals and in a manner that no agent is particularly conscious of; Selznick's (1957) classic description of the institutionalization of the Tennessee Valley Authority offers a striking illustration. In essence, we recognize organizations through our understanding of their purpose, whether intended or emergent; indeed, this is implicit in the Greek root of the word "organization."

Fourth, the efforts of the agents in the organization are expected to make a contribution toward the organization's goal. This condition is, of course, intuitive if organizations are viewed as intentionally designed arrangements for achieving a shared goal (e.g., Aldrich, 1979; Stinchcombe, 1965), while it also allows for gaps between this intention and reality (Scott, 1998); no presumption exists that the efforts are indeed being made or are successfully moving the organization toward its goal. However, even in informal organizations that emerge spontaneously, as opposed to intentionally designed ones, if we recognize a system-level goal at all, it must be because the constituent agents' efforts appear to contribute toward this goal. For instance, the existence of an emergent informal organization such as a community of practice may be recognized by the efforts of the members to further the goals of the community (while possibly furthering their own goals as well). Such an emergent informal organization could, of course, coexist within or across intentionally designed formal organizations (e.g., Rosenkopf, Metiu, & George, 2001).

The conceptualization of an organization we have adopted precludes neither a dyad nor a corporation from consideration as an organization, nor the various departments, units, subunits, and teams within a corporation; each of these can be treated as an organization, albeit of widely varying longevity and scale for the purpose of analysis. Further, both intentionally designed and emergent organizations qualify. For designed organizations, we *expect* that agents' efforts will contribute to organizational goals; for emergent organizations, we may infer their existence because the agents' efforts *appear* to contribute to an organizational goal. However, individuals, goalless networks, and crowds (but not mobs), or, in general, collectives in which the constituent agents are neither expected to nor seem to make efforts toward achieving the collectives' goals, are ruled out by our definition.

In this conceptualization boundaries and goals *jointly* identify organizations uniquely. This is because the same set of individuals may form multiple organizations, each with a different goal—some implicit and others explicit. Thus, the same set (or partially overlapping sets) of individuals may be colleagues in (a division of) Microsoft as well as cofounders of a start-up or comembers of a country club.

Organizing As Problem Solving

Weick (1969, 1974) persuasively argued that organiz*ations* and organiz*ing* are not the same things. Organizing is a process, and we believe it is useful to view it as a problem-solving process—as a search through a problem space (Newell & Simon, 1972; also see reviews by Dunbar, 1995, and Fischer, Greiff, & Funke, 2012). In this section we propose a useful set of dimensions to understand this problem space.

In keeping with most theories of organization, we take as a given that the agents who make up

human organizations have limited capacity for accessing and processing information (the bounded rationality assumption) and must be compensated for their efforts (the self-interest assumption), with it being understood that compensation need not take only monetary or even material form (Simon, 1947; Williamson, 1975). Several scholars have remarked that any functioning organization comprising agents with these attributes must have solved two fundamental and interlinked problems: the division of labor and the integration of effort (Burton & Obel, 1984; Lawrence & Lorsch, 1967; March & Simon, 1958; Mintzberg, 1979). We develop this idea by arguing that these problems can be further decomposed into four universal problems that any form of organizing, by definition, *must* solve. The first two problems, task division and task allocation, we jointly refer to as the "division of labor." The second two, reward provision and information provision, jointly constitute the problem of achieving "integration of effort" (see for instance Galbraith, 1973: 3; March & Simon, 1993: 2; Porter, Lawler, & Hackman, 1975). We consider each of these in detail.

The division of labor. The division of labor in organizations refers to the breakdown of the organization's goals into contributory tasks and the allocation of these tasks to individual members within the organization.

Task division refers to the problem of mapping the goals of the organization into tasks and subtasks. When this is done consciously by human agents, it typically involves a means-ends decomposition of the goals of the organization to create the set of interrelated subtasks and information/material transfers that are believed to be necessary for the goals of the organization to be achieved (Newell & Simon, 1972). Workflow diagrams, business process mapping, value chains, and engineering drawings are instances of artifacts that capture task division in the typical business firm. The knowledge that enables a human designer to accomplish more effective task divisions may be thought of as "architectural knowledge," which Baldwin defines as "knowledge about the components of a complex system and how they are related" (2010: 3). This knowledge is gleaned from experience and is more likely to exist for well-understood goals (von Hippel, 1990).

Task allocation refers to the problem of mapping the tasks obtained through task division to individual agents and groups of agents. In the traditional business firm, the designation of formal roles and the recruitment of individuals into them are the usual mechanisms to match subtasks to members' skill profiles. This may or may not involve assignation of clusters of similar repeatable tasks to an individual (i.e., specialization), although the benefits of specialization in general are considerable (Smith, 1776). Alternatives include task allocation to minimize interdependence across agents, to increase diversity of tasks, and to assign responsibility for tangible outputs rather than intermediate steps (Hackman & Oldham, 1976). Both the specifications of the role and the matching of individual agents to roles are typically conducted within a business firm by somebody with the formal authority to do so; indeed, the authority to conduct task allocation is one of the key features of an employment contract (Simon, 1951) and defines the boundary of the firm.

The integration of effort. The integration of effort within an organization requires the resolution of both cooperation and coordination problems (Gulati, Lawrence, & Puranam, 2005; Lawrence & Lorsch, 1967). The former is accomplished through providing the necessary motivation, the latter through information. The failure to solve either problem is sufficient to cause a breakdown in integration; good solutions to both problems are necessary to achieve integration (Camerer & Knez, 1996, 1997; Heath & Staudenmayer, 2000).

The *provision of rewards* refers to the problem of mapping a set of rewards (both monetary and nonmonetary) to the agents in the organization—in order to motivate the agents to cooperate by taking costly actions toward executing the tasks they have been allocated. Any organization must feature either implicit or explicit mechanisms for providing inducements—extrinsic or intrinsic—to its members in order to motivate entry and continuance of membership, if its constituent agents need to be motivated to contribute (Simon, 1951). For instance, procedures for bestowing monetary compensation as stipulated in the employment contract, and nonmonetary compensation in the form of work conditions and titles, the choice of colleagues, and advancement opportunities, are the primary reward mechanisms in the traditional business firm (Gibbons, 1998; Prendergast, 1999).

The *provision of information* refers to the problem that an organization's agents have the information needed to execute their tasks and coordinate actions with others. Coordinated action requires that enough information exist for interacting individuals to be able to act as though accurately anticipating each other's actions (Schelling, 1960). Students of organizations have pointed out that there are two basic means of solving the information provision problem: either the task division and allocation is such as to reduce the need for such information (e.g., through the use of directives, schedules, plans, and standards—as long as each of us obeys them, our actions will in aggregate be coordinated), or the channels needed to generate such information can be enriched (e.g., the opportunity for rich face-to-face or electronic communication; March & Simon, 1958). As with task allocation, authority also plays a critical role in the design and implementation of the reward and information distribution system of the traditional business firm.

The Universality of the Problems of Organizing

We argue that that the existence of solutions to the four problems of organizing we highlight—task division, task allocation, reward provision, and information provision—are individually necessary and collectively sufficient for an organization to exist—that these problems are, in effect, "universals of organizing."

First, we define what we mean by the existence of a "solution." Since we have defined each of the problems in terms of choosing a mapping—from goals to tasks (task division), from tasks to agents (task allocation), from rewards to agents (reward provision), and from information to agents (information provision)—that is meant to contribute to the goals of the organization, we say that *a* solution exists if such a mapping exists. It may thus be seen as a choice about organizing. The value of proposed solutions—the magnitude of the contribution of that solution toward achieving the goal of the organization—may vary significantly. Higher-valued solutions are the ones that bring the organization closer to achieving its goals, and there may be equifinality in solutions.

An organization, given how it is defined and the behavioral assumptions of bounded rationality and self-interest, must *necessarily* feature solutions to each of the four basic problems of organizing. Absent organizational choices that are expected to retain and motivate individuals, enabling them to undertake their assigned tasks (which aggregate toward the organization's goals) in a coordinated manner, one cannot recognize the existence of an organization defined as a multiagent system with identifiable boundaries and system-level goals toward which the constituent agent's efforts are expected to make a contribution.

Further, the existence of solutions to the four problems is also *sufficient* for an organization to exist. If the four problems have proposed solutions, then we have in effect (a) a set of tasks believed to contribute toward a goal (b) assigned to a set of agents who have been (c) rewarded for and (d) informed about executing those tasks so that their efforts are expected to contribute toward the goal of the organization. Thus, for an organization to exist, it is necessary and sufficient that solutions exist to each of the four basic problems of organizing.

If the set of problems of organizing we have identified is both parsimonious and complete (necessary and sufficient), then it must be also be universal to all organizations. In order to be able to meaningfully analyze differences in forms of organizing, we believe it is useful to define a form of organizing as follows:

> *Definition 1: A form of organizing is* a specific set of solutions to the four universal problems *that any organization must address in order to exist.*

This definition highlights the many-to-one relation between solutions and each problem; while the problems that any form of organizing must solve in order to attain its goals are universal, the specific ways in which those problems are proposed to be solved can vary considerably, and we argue that, indeed, this is what generates novelty in forms of organizing. In this view a form of organizing can be seen as a set of proposed solutions or hypotheses about how to solve the four universal problems of organizing; it can be viewed as a "model of organizing," and the solutions will generally vary in their fitness or quality (Baldwin & Clark, 2000; Levinthal, 1997).

In traditional business organizations it is certainly true that formal authority (Weber, 1922) is frequently both the origin of and the basis on which the solutions to the problems of organiz-

ing are enforced (Galbraith, 1973; Simon, 1947; Williamson, 1985). However, these solutions need not be crafted by an actor with formal authority, or perhaps by any actor at all. Selection through competition among variations provided by unintentional experimentation may also throw up working solutions, with little or no foresight involved (Hodgson & Knudsen, 2010). The existence of emergent informal organizations, often within the context of a formal organizational structure, may share a similar underlying dynamic; a set of solutions that contribute toward the organization's implicit goal may have emerged without conscious design.

IDENTIFYING NOVELTY IN FORMS OF ORGANIZING: WHAT MAKES THEM "NEW"?

To the extent that the set of solutions to the four universal problems we identified characterizes a form of organizing, it follows that novelty in forms of organizing can only arise in the form of a novel solution to one of these problems or in the form of several novel solutions to several of these problems. Put simply, a new form of organizing must solve one or more of the problems of division of labor and/or integration of effort in a novel manner. But novel relative to what? We need not insist that the standard of novelty of the solution requires it to be new to the world; rather, there must at least be novelty relative to a comparable group of organizations.

To establish the appropriate comparison group, we believe it is useful to consider organizations with comparable goals. Thus, one may observe a new form of organizing to develop software (e.g., Linux) or to generate encyclopedic content (e.g., Wikipedia), but in each case the novelty can only be appreciated with respect to existing forms of organizing that achieve the same goals. Thus, we argue that the more similar the goals of two organizations, the more insightful will be a comparison of their underlying forms of organizing. This also implies that comparisons of organizations that share similar goals at high levels of generality (e.g., "be profitable" or "survive") are less likely to be useful than comparisons of organizations that share goals at high levels of specificity (e.g., "develop an operating system" or "provide encyclopedic content"). Comparing Wikipedia with, say, Microsoft is therefore less likely to be a useful exercise than comparing it with the *Encyclopaedia Britannica* if the goal is to understand novelty in forms of organizing. It may also be instructive to compare the same organization over time as its form of organizing (but not its goals) change. We formally define this as follows.

> *Definition 2:* Novelty in a form of organizing *can be determined by assessing novelty in its solutions to the universal problems of organizing*—in comparison with existing forms of organizing with comparable goals.

We now discuss some recent and prominent developments in organizing to illustrate how our framework is useful in pinpointing what makes them novel. Specifically, we look at three relatively recent forms of organizing as instantiated by Linux, Wikipedia, and Oticon. Each of these has already been studied carefully by researchers, so we have a wealth of information to draw on. The key dimensions on which each of these forms of organizing differ from their traditional counterparts are summarized in Table 1.

Open Source Software Development

Open source software development (OSSD; e.g., what underlies the operating system Linux) has been hailed as "a promising new mode of organization" (von Hippel & von Krogh, 2003: 213) and "an entirely new model of innovation of relevance to many fields beyond open source software" (von Krogh & von Hippel, 2006: 976). To illustrate the value of our ideas, it is useful to contrast OSSD with proprietary closed source software development (PCSSD), the in-house development of software by commercial firms.

In both forms of organizing, task division has at least some elements of centralization, although it is much more in evidence in PCSSD, where it is conducted by a designated system architect. In OSSD the initial formulation of the problem by the founder of a project influences the task division (MacCormack, Rusnak, & Baldwin, 2006), but it is elaborated and developed significantly as others join and contribute to the project. Furthermore, whereas task allocation is formally mandated within a firm, OSSD departs significantly from this because of self-selection of members into roles within the organization. While software developers inPCSSD are typically salaried employees of the firm, contributions by individuals to OSSD are voluntary and

TABLE 1
Contrasting Examples for Solutions to the Universal Problems of Organizing

Goal	Software Development		Provision of Encyclopedia Content		Design and Production of Innovative Hearing Aids	
	PCSSD	**OSSD**	**Classic Encyclopedia**	**Wikipedia**	**Oticon Pre 1987**	**Oticon Post 1989**
Task division	System architect provides task architecture; only visible to (selected) members of firm	Founder provides layer 1 architecture, which subsequently evolves; visible to everyone	Editorial team provides task architecture; only visible to (selected) members of firm	No centralized task division	Rather detailed specification by management; competence based	High-level specification of six strategic tasks by the CEO; detailed subtasks specified by project leaders
Task allocation	By the firm (based on skills)	Self-selection (based on skills and preferences)	By the editorial team (based on skills/expertise)	Self-selection (based on preferences)	Authoritative task allocation; assignment of specialist tasks to specialist departments	Self-allocation into projects; within-project subtask assignment
Reward distribution	Salaries and bonuses as determined by the firm; combination of extrinsic incentives and monitoring	Universal free access to OSS; intrinsic motivation, visibility within community; signaling to employers	Salaries as determined by the firm, ***plus*** recognition (in the case of subject area experts)	Intrinsic motivation, visibility within community	Fixed financial compensation scheme, as well as status along a seven-layer hierarchy	Monetary rewards restructured to include stock options; increased emphasis on intrinsic rewards
Information flows	Physical collocation and grouping, ***plus*** (virtual) support infrastructure and tools	Virtual support infrastructure and tools	Physical collocation and grouping, ***plus*** virtual support infrastructure and tools	Virtual support infrastructure and tools	Formal written communication; plans, memoranda, etc.	Information transfer largely paperless (facilitated by IT)

may be rewarded by the fulfillment of use-needs and intrinsic motivation (including status and responsibility; Shah, 2006; von Hippel & von Krogh, 2003), as well as extrinsic motivation, including the signaling of competence to potential employers (Lakhani & Wolf, 2005; von Krogh, Haefliger, Spaeth, & Wallin, 2012).[1]

Coordination and information provision issues in PCSSD and OSSD are resolved somewhat differently. Within the firm, formal organizational structure, physical collocation, and shared tenure enable coordination, in addition to technologies for virtual collaboration. In OSSD, coordination through collocation or preexisting shared experience is typically not an option; instead, OSSD developers rely more strongly than their PCSS counterparts on virtual collaboration technologies and the software artifact itself for coordination—for instance, by including more comments in and documentation with their source code (Cramton, 2001; Hinds & Kiesler, 2002). In this sense it is quite clear that without the affordances provided by IT, particularly virtual and mass collaboration, as well as the ability to visualize the entire work system that is inherent in OSSD platforms (such as SourceForge, for instance), this form of organizing could not exist (Zammuto et al., 2007).

Unlike in PCSSD, OSSD cannot rely on formal authority created through employment contracts or property rights to solve any of the problems of organizing (von Hippel & von Krogh, 2003), yet research suggests that certain individuals actively exert authority; for example, founders and administrators reject contributions made to the project and exercise some influence over who joins the project (Dahlander & O'Mahony, 2011; Lee & Cole, 2003).

Wikipedia

Seeking to provide comprehensive information, traditional reference works, such as the famous *Encyclopaedia Britannica* or the German *Brockhaus*, divide the tasks of information gathering, fact checking, and information presentation across groups of specialists who have monetary incentives for doing so. The professional editorial team allocates tasks to the different experts within the organization, coordinates the exchange of information among them, and retains the ultimate power to decide which content enters the encyclopedia and in what format. Thus, task division and task allocation are heavily centralized; rewards distribution and information provision follow the template of any traditional business firm.

Free user-generated reference works, the most popular among them being Wikipedia, have presented alternative organizational approaches to fulfilling the same goal as conventional encyclopedia compilers. Acting as open (online) platforms, they allow any registered user to create new articles and anyone to edit existing content, without offering their authors financial rewards. Task division in Wikipedia is arguably even less centralized than in OSSD projects (like Linux), where the founder's initial problem statement may shape how the task architecture evolves. However, like Linux, contributors self-select into "projects" they wish to contribute to. Thus, no chief editor compiles a prospective table of contents and then proceeds to allocate entry writing to designated experts. The online encyclopedia also offers the communication platform required to pass on relevant information between agents.

Notably, because neither task division nor task allocation is centralized, exceptions often arise. The first kind includes factual misinformation or duplication—the inevitable hazards of a noncentralized division of labor. Here Wikipedia relies on the detection and correction of misleading material through knowledgeable user contributors (Gorbatai, 2012). The second kind of exception elicits a more authoritative form of intervention; these are the cases of libelous or malicious content, in which case the founder has publicly stated that he feels compelled to intervene in an authoritative manner (e.g., TEDGlobal, 2005).

Oticon

In order to compare different forms of organizing, we could also track the way the same entity

[1] OSSD and Wikipedia are largely collaborative forms of engaging autonomous actors in an innovative project. Such approaches are in contrast to contest-oriented models that seek one "best" answer in response to a stated problem, such as instantiated in InnoCentive, NineSigma, or TopCoder (for recent works on this topic, see, for example, Boudreau & Lakhani, 2013, and Guinan, Boudreau, & Lakhani, 2013). Yet some of the motivations found in the collaborative forms may also be present in the contest forms, and vice versa.

changes its form of organizing over time, provided (1) the overall goal of the firm remains temporally constant and (2) the reorganizing effort is "radical" in the sense that it leads to a fundamentally different way the organization seeks to solve division of labor and integration of effort problems.

Arguably one of the best documented cases in the modern management literature of such a dramatic change is that of the Danish hearing aids producer Oticon (O'Keefe & Lovas, 2002). The critical phase of interest in its corporate history was triggered by the successful introduction of a radical new technology by one of Oticon's competitors in 1987, causing the firm's worldwide market for hearing aids to plummet from 14 to 9 percent over a period of roughly eighteen months and causing the company to lose more than half of its market capitalization. In a dramatic attempt at organizational change, the newly appointed CEO Lars Kolind embarked on a restructuring of the firm's activities, a restructuring that has since received much attention and is often referred to as the "spaghetti" reorganization (Foss, 2003).

Today—as much as in 1904 when it was founded, and undeniably also in the year 1989 when it was reorganized—Oticon's overarching goal is to create and capture rents from the development, manufacturing, and sales of hearing aids worldwide. Yet the ways in which it pursued its aim pre 1989 and between 1989 and, say, 1993 differed considerably. Pre 1989, authoritative task allocation entailed assigning specialist tasks to specialist departments—marketing and sales, finance, and manufacturing and operations (O'Keefe & Lovas, 2002: 1). Rewards came in the form of fixed financial compensation, as well as status, allowing executives to peer down a seven-layer hierarchy from "their spacious, plush, and far removed" offices (O'Keefe & Lovas, 2002: 1). Traditional administrative structures were used to provide information to employees, including the heavy use of formal (written) communication.

Shortly after taking the helm in 1987, Kolind dramatically changed the way tasks were divided and allocated to employees, and he also altered reward distribution and information provision systems. Around 1989 he defined, at a very high level, six tasks that employees would have to be engaged in—namely, they would have

> (1) to develop and articulate strategic goals which defined the strategic intent of the organization; (2) to sponsor strategic initiatives; (3) to allocate financial capital to strategic initiatives; (4) to recruit people to the organization; (5) to take responsibility for the development of one area of functional expertise and knowledge in the organization . . . ; (6) to work on at least two strategic initiatives at any given point of time (Lovas & Ghoshal, 2000: 888).

Engaging in the first five tasks would be reserved for the firm's top management—members of the higher of only two remaining hierarchical layers in the firm overall. Task 6 would lie with the other members of the organization. Within this grand allocation scheme, however, employees could rather freely choose how to spend to their work time thenceforth—which projects to initiate and how to structure them (conditional on top management's budgeting approval—a process that Kolind intended to be fast and informal).

Monetary rewards were restructured to include stock schemes, and self-selection into projects allowed for greater self-actualization of employees. Information transfer became largely paperless, with Kolind symbolically shredding all paperwork, after scanning and saving it in the firm's IT system, and letting it tumble through a transparent tube running through the firm's cafeteria. The project-based approach to work from this point on mostly relied on direct face-to-face information exchange among members working within the same projects, with individuals able to switch between projects and work locations through the simple expedient of carrying all their data and files with them on a push cart. IT thus played both an enabling role in allowing this degree of mobility of employees across projects and perhaps a more important symbolic role through the initiative to go "paperless."

As the comparisons in Table 1 make clear, the consideration of organizations like Oticon, Linux, and Wikipedia suggests that, relative to their traditional alternatives, these are legitimately seen as novel forms of organizing (independent of their success). Our approach allows us to point precisely to what is novel about each of them—in what way they solve the universal problems of organizing in a new way relative to the traditional alternative (as summarized in Table 1).

DO NEW FORMS OF ORGANIZING REQUIRE NEW THEORIZING?

While the preceding account highlights how to identify novelty in forms of organizing relative to their traditional alternatives, this still leaves open the question of what this means for theorizing—in other words, whether the mechanisms involved require novel theorizing or can be accommodated within existing theories (also see Felin & Zenger, 2011: 169). To examine this issue, we consider what prior theories have to say about the mechanisms that are used to achieve the novel division of labor and the integration of effort in Linux, Wikipedia, and the "new" Oticon.

Novelty in Task Allocation

Common to the aforementioned examples is the self-selection of contributors into subtasks they prefer, rather than assignment to those tasks by somebody with authority. As Table 1 shows, this feature is common to OSSD, Wikipedia, and the new Oticon. While this is clearly novel when compared to the respective traditional counterparts in each case, situations where individuals select from among options are, of course, staple fare in any theory of decision making (e.g., Kahneman & Tversky, 1979; March & Simon, 1958; Simon, 1947), so we do not think the choice process itself requires much in the way of fresh theorizing. However, as we note below, this solution to the problem of task allocation gives rise to associated changes in the solutions adopted on the other three dimensions.

Novelty in Reward Distribution

The idea that intrinsic motivation stemming from properties of the task plays an important role in compensating employees is a well-established one (Hackman & Oldham, 1976). This is certainly a key and indeed explicit premise in each of the examples we have discussed, whether it be voluntary contributors to Wikipedia or the self-selection of employees into projects they like in Oticon (also see Lakhani & Wolf [2005] on its importance in open source projects).

Also common to the reward distribution rules in OSSD and Wikipedia (and more subtly so for Oticon) is the hazard of free-riding—anyone can benefit from the achievement of the goals of the organization (i.e., the creation of the OSS or the Wiki) without even having to be a member of the organization. The potential for free-riding exists in any situation where an individual can benefit by withholding contribution, given that others are contributing (Hardin, 1968). OSS and Wikipedia, by definition, are intended to be public goods (e.g., Gambardella & Hall, 2006), so free-riding can impede the provision of the social optimum level of these public goods. In the limit, we may note that each individual can benefit (through free and open access to the software or encyclopedic content) by not contributing at all. So why do people contribute?

The puzzle, however, is not unique to Linux or Wikipedia; other public goods that can exist despite the absence of mandated contribution include blood banks (Titmuss, 1970), the army, and, more generally, charitable and voluntary service organizations. Indeed, the mechanisms whereby the free-rider problem is effectively suppressed or mitigated in these situations are well known. These include social norms that encourage contributions and that sanction non-contribution (e.g., Ostrom, 1990), the existence of privileged groups that value the public good highly enough to contribute regardless of the (non) contributions of others (Olson, 1971), and the creation of institutions in which transaction costs are reduced sufficiently between the potential beneficiaries of a public good to be able to pool their efforts effectively (Coase, 1960).

These mechanisms seem also in evidence in OSSD: social norms that govern fair contribution have been documented by Lee and Cole (2003), O'Mahony (2003), and Shah (2006) and noted by the founder of Wikipedia (TEDGlobal, 2005). The formal legal structure of Oticon is, of course, a classic institution in which transaction costs are limited (i.e., a firm), but online platforms such as SourceForge or Wikipedia also represent institutions that lower transaction costs for contributors. Contributors to such projects also represent privileged group members who gain sufficiently from their own user needs and motivation to initiate and contribute to a project irrespective of whether others do so (Raymond, 1999; von Hippel & von Krogh, 2003). What is interesting is that free-riding may well exist *despite* the use of the latter two mechanisms in the literal sense that there will be users of the OSS or Wikipedia who make no contribution—but the mechanisms noted above ensure that the public good is nonetheless created. In sum, the

universal access reward distribution rule in OSSD or Wikipedia may not eliminate free-riding, but the presence of norms, institutions, and heterogeneity in utility allows this public good to be created, and these are well-known mechanisms in other contexts.

Novelty in Information Provision

While less prominent in the case of Oticon, a distinctive feature of OSSD and Wikipedia is that the contributing members who self-select into the organization are rarely (if ever) collocated—they form a classic distributed organization (Lee & Cole, 2003; Shah, 2006). As we know from the extensive literature on distributed work, when face-to-face communication channels are unavailable, the burden shifts to one of two other mechanisms. The first of these is creating and leveraging *common ground*—knowledge that is shared and known to be shared—to enable coordination of activities. IT often provides the means for creating common ground across locations, by allowing electronic communication channels, cross-visibility of actions and context, and the visualization of joint tasks (see Zammuto et al., 2007, for a discussion of the affordances for virtual collaboration provided by IT). The second is creating a *modular task architecture* that enables different individuals to work in parallel without having to explicitly coordinate their actions (Hinds & Kiesler, 2002; Srikanth & Puranam, 2011). This distinction mirrors an established one in organization theory between coordination through feedback versus programming (Galbraith, 1973; March & Simon, 1958; Thompson, 1967).

Modular task architectures are important in OSSD, although self-selection by contributors into tasks within the system may make it hard to maintain complete independence of action across them. The creation of common ground in OSSD relies on many of the same collaborative technologies as seen in other forms of organizing distributed work, including the use of email, bulletin boards, and version control software (e.g., Lee & Cole, 2003; Raymond, 1999; Shah, 2006)—as are seen, for instance, in offshore software development (Srikanth & Puranam, 2011). It is undoubtedly also true that OSSD and Wikipedia benefit from the fact that in both cases the final product—the software or the online encyclopedia—is its own representation. To the extent the code or content (and changes to it) is commonly visible, coordination across different agents contributing to it becomes simplified.

However, none of these features are unique to these novel forms of organizing; they are staple fare in more conventional forms of distributed work and have been theorized about extensively (e.g., Faraj & Sproull, 2000; Hinds & Kiesler, 2002; Wasko & Faraj, 2005).

Novelty in Task Division

In general, there are a large number of ways to conduct task division. Some well-known objectives that may motivate the choice of particular ways to divide tasks include the gains from specialization (Smith, 1776), the match to individual skills (Moreland & Argote, 2003) and preferences (Hackman & Oldham, 1976; Madsen, Desai, Roberts, & Wong, 2006), the gains from parallel efforts (Baldwin & Clark, 2000), lower measurement costs (Barzel, 1982), and enhanced accountability (Zenger & Hesterly, 1997).

While specialization, skill matching, parallelism, and accountability are all well-recognized criteria for task division, in each of the new forms of organizing we have discussed, the fact that individuals self-select into tasks (rather than are assigned to tasks by a hierarchical superior) suggests another rationale for preferring certain task divisions over others: *transparency*. As Baldwin and her colleagues have argued, a task division that is transparent (i.e., makes visible as fine-grained a task structure as possible) allows potential contributors to select specific tasks so as to participate based on their personal skills and motivations, which increases the likelihood they will choose to contribute instead of free-ride (e.g., Baldwin & Clark, 2006; Colfer & Baldwin, 2010; MacCormack, Baldwin, & Rusnak, 2012; MacCormack et al., 2006). Contributors may specialize (von Krogh, Spaeth, & Lakhani, 2003) or seek variation or opportunities to exercise particular competencies (Lakhani & Wolf, 2005).

While the criterion of transparency as a basis for task division is now recognized, further work that explicitly recognizes the trade-offs between different criteria for task division will doubtless be useful. For instance, we may conjecture that in OSSD or Wikipedia, transparency overrides parallelism as the key criterion for task division, given that the founder and the core of members work across interdependent modules, make de-

cisions about acceptance of contributions, and ensure that no essential tasks remain incomplete or redundancies arise (von Krogh et al., 2003).

In profit-motivated business organizations in general, administrative authority plays a key role in the solution to the four basic problems of organizing, as we have noted. Is it missing in the new forms of organizing we discuss? While in Oticon (both pre and post reorganization) staff is employed through formal employment contracts, no explicit contracts exist in OSSD or in Wikipedia that could provide a source of formal authority. However, this does not mean that authority relationships are missing.

Accounts of open source projects demonstrate the exercise of authority by the project's founders in a number of ways (e.g., *Business Week*, 2004; Raymond, 1999). For example, the assignment of incoming reports describing errors in the software (bug reports) to specialists in a certain area of the software is a form of task allocation based on the founder's authority and is a common practice in many OSSD projects. In addition, for a new project on the SourceForge platform, contributors interested in the project cannot self-select into the set of core members (e.g., Lee & Cole, 2003). Rather, these noncore members self-select into the periphery and contribute as outsiders until core membership is eventually bestowed on them by the founder or his delegate(s). A similar structure of authority based on founder's rights appears to be in place at Wikipedia, as indicated by its founder (TEDGlobal, 2005), although it is exercised only for managing some kinds of exceptions—such as the addition of libelous or malicious content—and as a backup if its other exception management mechanism breaks down.

This authority differs from that seen in conventional business contexts in that it is not based on formal contracts and it lays a greater emphasis on the right to accept or reject contributions and claims of membership (Dahlander & O'Mahony, 2011), rather than the right to direct an employee within a zone of indifference (Simon, 1951). However, the broader notion that authority can arise from noncontractual sources is at least familiar to us from the work of Weber, if not from earlier work.

In sum, novelty in forms of organizing does not always imply the need for novel theorizing. This is because the solutions in question may be novel relative to other forms of organizing with similar goals but not necessarily to the world. They may therefore be very well understood theoretically in other contexts.

NEW FORMS OF ORGANIZING AS NOVEL BUNDLES OF OLD SOLUTIONS

The examples of new forms of organizing we have considered here are justifiably novel relative to their comparison group of organizations because of novelty in how they attempt to solve one or more of the universal problems of organizing (Table 1). At least in these examples, IT plays an important role in enabling their existence, particularly through the affordances it provides of visualizing the global task architecture and allowing mass and virtual collaboration (e.g., Wikipedia, Linux), but also in a symbolic form (e.g., the public display of an icon representing paperlessness at Oticon). However, as we have argued, existing theory provides a sound basis for understanding much of this novelty, because the solutions are rarely novel to the world. Of course, this may well be a property of the set of illustrations we have considered. What is more interesting in our view is that our illustrations also offer an unusually clear window onto the complementarities between the solutions for each of the four basic problems of organizing (Milgrom & Roberts, 1990, 1995).

In the context of the four universal problems of organizing that we define (i.e., task division, task allocation, information provision, and reward provision), we can say that a pair of solutions to these problems may be "complements" when adopting one increases the value of the other (this is the usage introduced by Milgrom and Roberts [1990] and later shown by them to be analytically identical to notions of synergy and fit [Milgrom & Roberts, 1995]).

Consider task allocation through self-selection—a common solution to task allocation in each of the new forms of organizing considered above (see Table 1)—which has implications for the value of solutions to task division, reward distribution, and information provision. Given task allocation through self-selection, task division in each case must ideally be transparent enough to enable self-selection (e.g., Baldwin & Clark, 2006; MacCormack et al., 2006). Clearly, this is the case in OSSD as well as Wikipedia;

the switch to paperless administration could have facilitated a similar move at Oticon (though we lack the primary data on this to know for sure). Thus, the value of self-selection (as a solution to the task allocation problem) increases if the solution to the task division problem features a high emphasis on transparency, and vice versa. Self-selection-based task allocation and transparency-based task division are therefore complements.

In turn, appropriate task allocation through self-selection may obviate the need for providing extrinsic incentives, as in Wikipedia or OSSD (Hackman & Oldham, 1976; Wasko & Faraj, 2005), and possibly lower them at Oticon. Thus, the value of self-selection (as a solution to the task allocation problem) must also increase with the reliance on intrinsic motivators as a solution to the reward distribution problem; these, too, are complements.

Furthermore, since task allocation through self-selection into a transparent task architecture may also draw in a diversity of possibly geographically distributed contributors, the information requirements for coordinated actions will necessarily look different from those for employees traditionally gathered together by administrative authority. For geographically distributed actors, as in Wikipedia or OSSD, technologies that enable physically distributed agents to communicate and observe each other's contributions are therefore solutions (to the information provision problem) whose value may increase with the adoption of self-selection and transparent task architecture as solutions to task allocation and task division problems (Hinds & Kiesler, 2002). For collocated contributors, as in Oticon, increasing the amount of information about each other's actions may occur instead through greater emphasis on face-to-face communications and rich, regular information exchange (O'Keefe & Lovas, 2002).

This pattern of spiraling linkages among the solutions to the problems of organizing—in our examples, among self-selection, transparent task architectures, intrinsic motivation-based rewards, and virtual collaboration technologies—highlights their complementarities (Drazin & Van de Ven, 1985; Milgrom & Roberts, 1990). Because of these linkages across problems, we also conjecture that it will be rare to find new forms of organizing that display novelty in the manner in which only one of the basic problems of organizing is solved. More typically, we may expect to see frequently occurring clusters of solutions across forms of organizing; in this sense, new forms of organizing may, in fact, be new bundles of old solutions. It is also likely that organizations will have varying predispositions and levels of aptitude at discovering and implementing such recombinations (Galunic & Simon, 1998; Kogut & Zander, 1992).

DISCUSSION AND CONCLUSION

We discuss how our work adds to prior work on understanding organizations as complementary bundles of elements, and we offer some direction for applying our approach. We conclude by revisiting the question of what makes a new form of organizing "new" and whether it necessarily requires new theorizing.

Comparison with Prior Work on Complementarities Among Organizational Elements

Organization theorists have offered many insightful and impactful analyses on commonly occurring clusters of organizational attributes. Configuration theories (e.g., Doty, Glick, & Huber, 1993; Fiss, 2007; Meyer, Tsui, & Hinings, 1993) are an important instance. Others include sociological theories of organizational forms (e.g., DiMaggio & Powell, 1991) or theories of organizational adaptation on rugged landscapes (e.g., Levinthal, 1997). We explain below why our "universal problems of organizing" approach can add something new to this already extensive literature.

Configurational approaches to organizations emphasize "commonly occurring clusters of attributes of organizational strategies, structures, and processes" (Ketchen, Thomas, & Snow, 1993: 1278). Such clusters of attributes are either empirically determined (e.g., Miller & Friesen, 1984) or theoretically specified (Mintzberg, 1979). Consider two important instances. First, in the Miles and Snow (1978) typology, prospectors, defenders, and analyzers face different environments and, consequently, have differing objectives; Miles and Snow argue that this results in systematic differences along key organizational dimensions, such as formalization, centralization, size, and vertical and horizontal differentiation. Second, Mintzberg's typology specifies ideal

types of organizations—simple structure, machine bureaucracy, professional bureaucracy, divisionalized form, and adhocracy—which also represent clusters of scores on key organizational dimensions. Unlike Miles and Snow, Mintzberg's justification for these particular clusters rests on internal coherence rather than external alignment (see Doty et al., 1993, for a comparative test of these theories). Nonetheless, the central theoretical claims in configurational theories take the form of explanations of (1) why only certain clusters of attributes—configurations—should be observed and (2) when some are relatively more or less likely to be observed than others.

In our view, the clusters of attributes identified in configurational theories embody regions in the space of solutions to a set of underlying universal organizational problems. Our focus has been on identifying these problems. We recognize we are not alone in making such an attempt. In their influential work Miles and Snow (1978: 22–23) explained organizational configurations as clusters of solutions to the universal problems organizations confront *when adapting to their environments*—the entrepreneurial problem (a choice of product market domain), the engineering problem (the choice of a technology), and the administrative problem (reducing uncertainty and creating innovation). Quite explicitly, these authors used organizational-level constructs, "to the point where entire organizations can be portrayed as integrated wholes in dynamic interaction with their environments" (1978: 30).

Our approach focuses on a different set of basic problems of organizing that an organization needs to solve *to exist as an organization*—a multiagent system with goals. The focus therefore has been on how the actions of individual agents are aggregated into organizational-level objectives. To do so we argued that the four basic problems are task division, task allocation, information provision, and reward provision. Looking at organizations through the theoretical lenses provided by these two different problem spaces yields different insights. Even though different organizational configurations may embody different solutions to the adaptive problems of entrepreneurship, engineering, and administration, they must each have solved the underlying problems of division of labor and integration of effort, possibly even in similar ways. For this reason, every new form of organizing is likely to be a distinct configuration, but the converse is not necessarily true. For instance, prospectors and defenders may differ in their degrees of centralization, formalization, and structural differentiation, but we would hesitate to think of them as distinct forms of organizing as long as both resemble each other in how they divide and allocate tasks and inform and reward their employees.

Conversely, comparing the *Encyclopaedia Britannica* with Wikipedia on the dimensions of centralization, formalization, and structural differentiation, or even noting that they seem to embody different solutions to the entrepreneurial, engineering, and administrative problems, would not expose qualitative differences in how they solve the basic problems of organizing—in how they divide and allocate tasks and reward and inform agents. Thus, we conjecture that configurational approaches may be more useful than our approach for understanding variations within a form of organizing in terms of how the problems of adaptation are solved, whereas our approach may be more useful for understanding differences across forms of organizing in how division of labor and integration of effort are accomplished.

We also recognize that institutional sociologists have offered useful perspectives on the emergence of new organizational forms (e.g., Lounsbury, 2002; Rao & Haveman, 1997). However, we emphasize that what we call a "form of organizing" is not necessarily the same as an "organizational form." The latter is used in the sociological literature on the categorization processes by which audiences confer legitimacy on novel categories of organizations. An organizational form is treated as a bundle of attributes, whose presence or absence influences the process of legitimation by the relevant audience (Hannan & Freeman, 1977; Hsu & Hannan, 2005). These features could also include the goals of the organization, and, indeed, in empirical practice that is how organizational forms are often distinguished. Thus, the conception of an organizational form is primarily in terms of an object of social evaluation; how the organization works is of secondary, if any, importance in this conceptualization. In other words, when assessing novelty in organizational forms, the goals are not necessarily held constant; per our analysis, assessing novelty in forms of organizing would be impossible without holding the goals constant.

To take a specific instance, the plethora of new organizational forms that Lounsbury (2002)

documented in response to a change toward market-based logics in the U.S. financial sector do not seem to display novelty in forms of organizing. Conversely, as long as the novelty within the new forms of organizing we describe in our article remains invisible to the audience of evaluators, they will not be qualified as a new organizational form (Hsu & Hannan, 2005).

The literature on organizational adaptation on rugged "NK" landscapes has also taken the existence of complementarities in elements of organization as a central premise (e.g., Levinthal, 1997). This approach focuses on describing boundedly rational search processes in a problem space that is characterized by complementarities; the key insights that seem relevant to our conceptualization of organizing as problem solving are (1) because of complementarities between choices on the four problem dimensions, there are likely to be many local peaks; (2) for the search process to avoid entrapment on a local peak, it must feature mechanisms for both expanding search efforts beyond the immediate neighborhood (exploration) and preserving a good solution (exploitation); and (3) complementarities in the search space (i.e., the degree of ruggedness of the landscape) influence the relative importance of these mechanisms (e.g., Rivkin & Siggelkow, 2003, 2007; Siggelkow & Levinthal, 2003; Siggelkow & Rivkin, 2005). Thus, we would also expect forms of organizing to stabilize around clusters of complementary solutions, with the discovery of new forms of organizing being fairly rare events triggered by organizations and individuals with strong motivations to explore. While these are extremely valuable insights into the process of search for new forms of organizing in a problem space characterized by complementarities, where those complementarities come from and the particular dimensions involved are not the focus for the literature using NK models, whereas they are for us.

Thus, while NK model–based approaches presume the existence of complementarities, they would not specifically predict the content of particular bundles of complementary *solutions*—for instance, that transparency of task architectures, self-selection into tasks, the reliance on intrinsic motivation, and virtual collaboration are likely to be found together, as appears to be the case in a large number of IT-enabled new forms of organizing.

Directions for Further Research

In our view, the "universal problems of organizing" approach can be very generative, with many implications. The first of these—understanding novelty in forms of organizing—is what we have developed in detail in this article, but there are others that also seem fruitful opportunities other researchers could exploit. For instance, the approach we have developed can be used to understand *similarity in organizing*; the universal problems approach may also help scholars classify organizations in novel, fruitful ways (for other approaches to classification, see also McKelvey, 1982). Rather than cluster organizations by industry, size, or for-profit versus not-for-profit stauts, or on attributes like centralization and formalization, scholars could instead discover underlying similarities based on how the universal problems are solved. For instance, such an approach may reveal that disaster relief organizations have a lot more in common with open source software or Wikipedia than hitherto suspected because of the potential value from using self-selection to solve the task allocation problem. Conversely, one may be able to design new forms of organizing by borrowing from one domain and inserting into another; for instance, allowing self-selection into tasks may improve motivation in and contributions to voluntary organizations, improving peer-to-peer communication may reduce reliance on command and control systems in military contexts, and so on. Such designed interventions could be rigorously tested through controlled field experiments.

Another possible application is the study of organizing as a problem-solving process. Since Newell and Simon's (1972) work, the process of human problem solving has been modeled as a search process through a problem space. An extensive body of literature in cognitive psychology suggests that the search behavior of a boundedly rational agent in this sort of problem space is characterized by a few well-known search strategies, such as "local hill climbing," which is the search for local improvements (through change in one dimension at a time) from the current position; "analogical reasoning," where one imports solutions from one problem space into another; and "divide and conquer," where the problem space is partitioned

and searched independently (Dunbar, 1995; Fischer et al., 2012).

In order to move beyond the general features of human problem solving to focus on organizing as a particular kind of problem solving (rather than problem solving in the abstract, as often represented in NK models), we must first define the dimensions of the problem space through which the process of search progresses (Newell & Simon, 1972). The four universal problems we identify provide the natural set of dimensions for the problem space of organizing. Thus armed with this conceptualization, scholars could study, for instance, how choices about organizing vary when made in a decentralized manner (as in self-organizing groups) versus through a centralized designer (as in traditional bureaucracies). Another interesting area of study could be comparing how the problem solving differs when the problem solver is an expert versus a novice—which has emerged as a standard approach in problem-solving research to document the existence and nature of expertise in a domain (Ericsson, 2006). Finally, one could study what happens when the solution space is transformed through exogenous shocks along any one dimension (such as the recent rapid developments in distributed collaboration technologies) to test our conjecture—that no significant change should occur until complementary solutions are found on other problem dimensions. A related issue pertains to whether de novo entrants or established organizations are more likely to embrace new forms of organizing—whether, in fact, the Oticons of the world are rarer than the Wikipedias.

Such analyses only become tractable once we have dimensions on which to compare the problem-solving efforts and resulting solutions, which our approach provides. Put differently, the power of using these four dimensions of the problem space for organizing lies in the fact that they are specific to organizing but not to any particular organization. Using them, our analysis makes clearer what constitutes novelty in forms of organizing and when this may require new theorizing. We hope that the approach we depict can help enrich the discussion of new forms of organizing, beyond the rallying cry that we need new theory to understand them.

Conclusion

Our goal has been to develop a systematic approach to answering the question of what makes a new form of organizing "new." We proposed that a new form of organizing is a novel and unique set of solutions to the universal problems of division of labor and integration of effort. We also decomposed these basic problems into four subproblems that we think are fundamental to any form of organizing. Novelty in a form of organizing arises when one or more of these problems are solved in a novel manner—at least relative to the class of organizations with comparable goals (i.e., the solution need not be new to the world).

However, for the same reason, new forms of organizing do not automatically imply the need for new theorizing since the solutions may exist and be well known in other contexts. Thus, in the case of each of the new forms of organizing we have discussed (Table 1), our analysis suggests that (1) it is a new form of organizing relative to how the same goal was being met traditionally and (2) much of this novelty can be explained by existing theories, but (3) fruitful avenues for new theory development may nonetheless lie in understanding the complementarities across the solutions to the problems of organizing that these new forms of organizing embody.

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