A Sociologist Looks at Crowds: Innovation or Invention?

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Abstract: Crowd-based organizational models are purported to be more open and participatory than traditional organizational forms. But are they novel inventions or permutations of forms that have existed previously? This essay examines the wide array of innovations pursued under the umbrella label of crowd phenomena and asks if they have altered traditional ways of organizing. The ramifications of crowds for both workers and consumers are also discussed. Central features of crowd organizing include spot transactions, short-term relations, demand-based pricing, heterogeneous demand, and reputations established through feedback mechanisms. Security and formality appear to have been replaced by openness and precariousness. The essay concludes with a call for further study of the contents of crowd-generated products and services.

Introduction

How do we theorize the array of purportedly new organizational practices and forms that range from crowdfunding to crowdsourcing to peer-to-peer markets, to the so-called sharing economy? There is immense interest in these models of organizing, as the papers in this volume suggest. Pundits and academics alike have been quick to describe these forms as more open and participatory than older models. At the same time, some of the actions of crowd-based, peer-to-peer markets have invoked howls of protest. In France, attempts at introducing Uber were met with charges of "barbarism." In many locations around the globe, opponents fear that the so-called sharing economy is creating a new "precariat," dependent labor with scant protection and unstable wages (Standing, 2011).

What are the relevant criteria for thinking about a new organizational form? When and why do new kinds of organizations emerge, persist, and spread? Some settings are more hospitable to novelty or exogenous perturbations than are others. Explaining this relative "poisedness" is essential to understanding when and why new organizational forms appear and take root (Johnson and Powell, 2015). By poisedness, I refer to the availability or vulnerability of a historical context to the reception of an innovation and subsequent reconfiguration by it (Padgett and Powell 2012, pp. 26-28). As one illustration, in the 1960s and '70s, the idea that science and property should be thought of jointly was abhorrent to many, but political and economic changes in the 1980s lead to the two formerly oppositional concepts becoming fused into ideas of intellectual property and academic entrepreneurship, which quickly became widely embraced (Powell and Owen-Smith, 1998).

Poisedness invokes circumstances that are rich with potential. Relations and trends at one level are available to be coupled with innovations at a different one. When such coupling occurs, the second level becomes a self-sustaining pool for the innovations. In turn, the fates of the two become intertwined and have cascading effects, producing novel forms. The changes that ensue alter the nature

of what is possible. New ideas become thinkable, and changes ensue that could not have been envisioned at the start. The resulting concatenations through social and economic structures afford the opportunity for novelty to emerge from unanticipated feedbacks across multiple contexts.

How do we analyze the architecture of social structures to understand which ones are fertile ground for new forms of organization? And when faced with a seemingly foreign form of organization, how do we assess its novelty? Should we begin by analyzing conditions of membership, access, or permeability? Do crowd-based forms complement or replace older models? What resources do they unlock or create anew? Are problems of inexperience or coordination solved in a new manner? Put differently, are present-day forms fundamentally new or are they derivations from or permutations of what has existed previously? To make sense of these questions, both empirical context and theoretical insight are needed.

Innovation vs. Invention

A meaningful definition of novelty underscores the unfamiliarity of an organizational form to the relevant audiences in the historically specific social context into which it is introduced. Consequently, it makes sense to place the current array of activities that fall under the umbrella of "open innovation" (i.e., ideas derived from multiple, diverse sources to create new products or services) in the context of the history of research and development efforts in the 20th and early 21st centuries.

Scholars of the innovation process have previously analyzed the transition from internal research and development during the long era of large corporate in-house laboratories from the 1920s to 1980s, to more collaborative forms, in which companies, university researchers and government and nonprofit laboratories engaged in collective R&D (Henderson and Clark, 1990; Powell, 1990; Hounshell, 1996; Powell, Koput and Smith-Doerr, 1996; Oliver and Montgomery, 2000; Cockburn and Stern, 2010). Some now argue that we are witnessing the next stage in an evolution from open forms of

collaboration, which were typically managed by organizations, to a new model of crowd-managed innovation (Chesbrough, 2006; Dahlander and Gunn, 2010; Lakhani, Lifshitz-Assaf, and Tushman, 2013).

The explanation commonly given for this transformation would have brought a smile to the face of the eminent business historian Alfred Chandler. He famously described the emergence of the modern corporate enterprise as the consequence of technological change, growing scale, and coordination costs (Chandler, 1977). Today, some scholars argue that when "computational costs are low and widely available and distributed communication is inexpensive, open or peer innovation communities displace organization based innovation" (Benner and Tushman, 2015: 505). To be sure, decentralized, cooperative, self-organized modes of problem solving are a different model from hierarchically arranged, organization-centered R&D (von Hippel, 2005; Benkler, 2006; O'Mahony and Lakhani, 2011). Nevertheless, the argument that a combination of technology, scale and lower transaction costs produces new models of organization fits nicely with a Chandlerian view of the history of the corporation.

But do these functional arguments help us understand whether the transition we are witnessing is an incremental one or a dramatic shift? Little current research asks whether crowd-based models are new solutions to old problems or answers to problems that have yet to be fully understood. Are forms of crowd-based organizing producing new kinds of products or new categories of persons? Who captures the rewards and controls the resources from these efforts? And do older theories apply to organizations that are crowd natives, that is, new-to-the-world organizations that use only crowd-based practices?

In a recent book, John Padgett and I examined novelty in a wide array of forms across seven centuries of social, economic, and political circumstances, ranging from the Renaissance to contemporary Silicon Valley. Our book had a simple mantra*: in the short run, actors make relations; in*

the long run, relations make actors (Padgett and Powell, 2012). We argued that people carry skills and networks with them as they flow through jobs and organizations. These skills and networks are modified through social interaction, via learning and forgetting. These relationships construct who we are as people. Organizations are reproduced by the intersecting biographies of the people who flow through them. Thus the social construction of people and the construction of organizations are a dual process. We did not think about what it means when many people work outside the formal boundaries of an organization, but our framework of analysis is relevant. I apply it here to crowd-based phenomena.

Padgett and I draw a sharp distinction between innovation and invention. For us, innovation represents spillover from adjacent domains, the bringing together of familiar practices, concepts, and ideas from proximate social worlds. This is an interstitial process in which previously known elements are recombined. By bringing these formerly separate ideas together, existing ways of doing things are improved. In contrast, invention represents transposition across distant social and economic worlds. Such introductions into foreign domains are typically considered transgressive, hence they are much more likely to fail. But in those rare cases when they do take root, such moves create social invention: new categories of persons, new kinds of organizations, perhaps even new industries or political regimes. And in turn, these new permutations may cascade to remake the larger social, political and economic landscape, for better or for worse. In short, invention represents a change in the way things are done. In our language, invention offers more "evolvable" possibilities, spawning lateral and vertical spillovers to other lines of work and geographic locales that amplify individual entrepreneurial efforts.

When analysts looking at crowdfunding talk about democratizing finance, they point to the mashup of charitable fundraising with a venture capital mindset. Contemporary organizations like Kickstarter and Indiegogo represent such a hybrid. One of the biggest successes on Kickstarter is the Pebble watch, made popular by a popular company that eschewed VC funding to go with a

crowdfunding model, without alienating people who turn to crowdfunding for social and political causes. From our perspective, this is indeed an innovation, but it falls short of the bar of invention as traditional forms of charity and financing are simply being combined on-line. Invention would entail new categories of products or services being offered and new kinds of individuals being supported. There is some initial evidence than financing is more egalitarian, with more women funded. In an analysis of Kickstarter campaigns, Sorenson et al (2016) find that crowdfunding expands access to a larger pool of innovators in more geographically dispersed areas than the usual hubs of venture financing. But success at crowdfunding also appears to vary by age and attractiveness, and to benefit whites disproportionately. So innovation, yes; invention, no, at least not yet.

Some readers have lamented that our distinction inverts Schumpeter (1934) and his evocative language of creative destruction, which is much loved by contemporary disruptors. In the early 20th century Schumpeter thought invention was commonplace, as people were continually coming up with all manner of new things, but innovation in existing products and services was challenging. Today, innovation is constant and to be sure consequential, but novelty is the much harder task or entity to theorize. Who are the creators and carriers of social and technical invention? How do we think about which boundaries are crossed and what kind of distances are traveled? How accessible or vulnerable are existing systems to perturbation? To answer these questions, we need to move beyond the language of technological determinism, transaction costs, and exogenous shocks to think hard about when social and economic systems are transformed.

In a seminal article on social structure and organizations, Arthur Stinchcombe (1965) reflected on the emergence, persistence, and diffusion of new organizational forms. His idea that new forms are subject to numerous liabilities not faced by existing organizations has been widely studied. But in addition to the liabilities of newness argument, he also speculated about when new forms arise and persist, which has been less researched. He argued that settings rich in contacts between distinct social

groups are highly hospitable to novelty, but he did not ask who forges these contacts. Padgett and I provide a clear answer: the creators and carriers of novelty are amphibious actors, with links across multiple networks that afford them the opportunity to staple together contradictory principles. Innovation and invention are the result of different forms of intersection of peoples and their biographies.

In applying this insight to the topic of crowds, we should start with the earlier transition from internal, hierarchically organized R&D to collaborative more open forms of innovation. Clearly, the collaborative inter-organizational networks that developed some twenty-five to thirty years ago represented new means for accessing information and resources. They were alternatives to both in-house R&D and top-down-driven research (Powell and Sandholtz, 2012). These forms clearly merit a check on the Padgett and Powell innovation scale. Were they an invention, however? Did network-based R&D produce different kinds of products? Did it alter the R&D process inside the communities that were engaged in these collaborations? Our answer is yes, but it requires some discussion to fully appreciate.

The collaborative model pursued by new biotech firms, university and government labs, and established pharmaceutical companies deeply influenced research and biomedical product development, prompting more focus on new- to-the-world medicines rather than "me-too" or derivative drugs (Cockburn and Stern 2010). By influential, we do not mean a "mere" case of one side adopting some practices of the other. To be sure, industrial science today recognizes the importance of intellectual capital, building university-like campus settings to attract the creative class and forming partnerships with universities and nonprofit institutes. The insular corporate R&D lab has dissolved into a lattice-like network of collaborations; publishing by scientists in large firms is not just tolerated but encouraged; and research positions at corporate-sponsored nonprofit institutes are highly sought after by university PhDs. But the reverberations run in both directions. Research universities have become

much more businesslike as academic entrepreneurship is celebrated, and compensation has become market-based and laden with incentives. These interminglings of the boundaries of knowledge production have altered both careers and reward systems. The pathways linking public and private science have been profoundly changed. Moreover, the transposition of science into commerce was even more unsettling and transformative; it has recast the nature of science and industrial work itself.

Academic science and corporate research were formerly organized around the twin frames of disciplines and departments. Both were steeped in deep functional expertise—in the academy, specialized knowledge accumulated in an area of scientific inquiry, and in industry, prowess at a skill was relevant to a particular product or domain. The network-based model opened up a project-focused alternative, driven by interdisciplinary and interorganizational collaborations and impelled to solve problems quickly. The shift to project-based work has the virtue of flexibility as well as the limitation of fragility. In both the corporate and academic realms, project-based work has become a collaborative enterprise, transcending department and organizational boundaries, drawing together firms, universities, research institutes, and government labs in fierce research and product development races. Research is no longer a local enterprise, but a coordinated, collective affair. The established players have learned these new rules of the game, and they operate alongside the upstarts and universities in a new regime (Powell and Owen-Smith, 2012).

What purchase do these ideas give us for understanding crowd-based innovation? The open source movement ushered in by Linux was initially the province of hackers. For at least a decade, loosely organized communities drove one avenue of software development. Then, with the participation of incumbents such as IBM, spurred by its competition with Microsoft, open-source software became much more widely used. Indeed, the old “enemy” Microsoft is now involved in all manner of alliances with parties ranging from nonprofits to universities to small firms to ostensible rivals. But it is also true that Microsoft discourages employees from participating in open-source projects and Bill Gates has

become the richest man in the world. Is this a case of an older corporate model taking advantage of new forms of collaboration, and using them to maintain its position (Powell et al, 2005)?

Invention is not just the province of the new; old elites have used novel means to retain their powers for centuries (Padgett and McLean, 2006). So the question is not simply whether new organizational models supplant older ones; it is also necessary to analyze whether collaborative models engage with incumbents in a way that changes their *modus operandi*. I know of only one study that considers this question. Lifshitz-Assaf (2015) examines the responses of NASA scientists and engineers to the successful use of crowd-sourced solutions to some of the deepest problems of life science in space exploration, finding that some R&D staff underwent significant professional reassessments, whereas others fiercely defended the status quo. More analysis of how crowd-based innovation alters the contemporary realms of science and industry is needed; too much attention is directed only to ostensibly novel phenomenon, without parallel attention to how older organizations absorb new practices.

The Crowd Economy

Over the past decade and a half, the crowd economy has evolved from small experiments outside the mainstream of economic life to newer, on-demand consumer services filling many of the daily needs of consumers and becoming a growing form of employment for many. The early generation of peer-to-peer markets began with online sellers eBay and Craigslist. Looking back, we can see the remarkable effects of these early explorers. Craigslist and other related services have killed classified ads as a source of revenue for newspapers. EBay and Amazon have altered the retail business, forcing brick-and-mortar stores to move on-line and changing the way consumers all over the world purchase daily items. But does changing how we shop transform our sociability, alter how we interact with

others, or just make those interactions occur across greater distances rather than locally? Does reading the reviews of unknown others differ from relying on the advice of friends and "experts"?

Another model from the early days was the third-party open-innovation contest, in which companies posted unsolvable problems on-line in hopes of finding solutions. Remarkably, many such solutions appeared to be close at hand and open contests have proven to be robust (Lakhani and Jeppesen, 2007). The initial crowd-sourced models were spot transactions with infrequent participation. Another pioneer was Wikipedia, a confederacy that seemed to be an impossible competitor to the standard encyclopedia (Jemielniak, 2014). Gradually, Wikipedia has evolved from a curiosity into a digital commons. As a faculty member, I recall that little over a decade ago I would not accept Wikipedia references in a student paper; now I sometimes check students' facts in Wikipedia because it works so seamlessly. Wikipedia's fascinating organizational design balances adhocracy with formal control by a group of volunteer leaders. Such models are appealing sites for ethnographic research (see, for example, Chen, 2009 on the Burning Man organization as another example of coordination without overt control.)

A second wave of crowd-based innovation took on a more political or moral flavor. End users, rather than producers, became a driving force in new product development, giving patients, designers, even skateboarders more voice (von Hippel, 2005). Organizations such as Indiegogo and Kickstarter promised to democratize investment, and organizations like Etsy promoted crowd capitalism. Increasingly, innovation contests were driven less by companies and more by communities. The innovation process became somewhat more public.[1]

[1] One might argue that outside the world of apps, in academic and government labs, the innovation process has not changed all that much. Open access publications are accepted only in some fields. There is scant evidence that researchers have opened up their data collection and analysis processes to allow for crowd contributions.

The next wave has been the largest, reflected in the provision of on-demand services by such companies as TaskRabbit, Uber, Lyft, Airbnb, Bla-blacar, and Upwork (formerly oDesk), to name only a few. These organizations respond to heterogeneous demands. They no longer rely on infrequent exchanges with consumers, but attempt to become primary service providers. They rely on crowd coordination, but now firms are the ones who reap the advantages. And employment for these organizations takes a very different form from long-term employment with a traditional organization. More recently, we have seen a handful of organizations with ambiguous names, such as Favor, Postmates, and Care.com, which seem to provide a patina of altruism, softening the market-based logic of on-demand services. Some think these on-demand services are twisting words to make their apps seem selfless. Indeed, one wonders whether framing an organization, or even an economy, as a form of sharing or peer-to-peer transactions is intended to divert the focus from the companies that provide the services, in part because the platform that provides the service may rigidly determine when and how services are delivered, and how people are paid. Put differently, many of the sharing economy organizations use forms of crowd coordination, but it is the firms that reap the lion's share of the rewards.

Let us step back from this burgeoning array of organizational models and ask what features are common to the diverse entities. The critical elements revolve around a design that relies on spot transactions and accommodates a high degree of heterogeneity in those relationships. Consumers are not tethered to their phone company or cable TV provider by long-term contracts. Nor are they tied to long-term employment relations, allowing considerable flexibility for the employer and necessitating adaptation to the "gig economy" by the employee.

There may well be greater reliance on ideas from external sources, but this feature has not been closely studied. Some of the early work suggests that there are influential digital gatekeepers, as research has shown strong power-law distributions in both the provision of ideas and the monitoring of

various open-source platforms such as Linux or Wikipedia (Fleming and Waguespack, 2007; Ferraro and O'Mahony, 2012 Jemielniak, 2014, ch.7). Algorithms take on a central role as technology matches buyers and sellers and elicits and incorporates highly dispersed information. Pricing is flexible in response to demand. In contrast to brick-and-mortar organizations, the peer-to-peer services have very low transaction costs. Maintaining quality relies on feedback and preserving reputations after services are delivered rather than upfront screening. Policing low quality and fraud is largely up to consumers.

The array of activities is highly data intensive. Academics are fascinated by the opportunities created because they represent an exceptional new source of data. And the movement of academic researchers into data science jobs has many features in common with the early days of the commercial life sciences as faculty and graduate students cross boundaries between the academy and commerce to engage in private science (Powell and Sandholtz, 2012). An extraordinary amount of experimentation is under way, testing pricing, auctions, contests, and matching models.

Implications

Do these new market models create different kinds of producers and foster alternative worker and consumer identities? Opinions today are deeply divided on this point, both domestically and globally. Whereas some argue that the sharing economy offers more flexibility and self-determination to working people, others castigate the so-called sharing economy as capitalism in hyperdrive, injecting its logic of consumption, monetization and efficiency into all walks of life. Critics charge that the sharing economy coopts people into their own disempowerment. The piece-rate labor of the crowd economy may provide independence for some workers, but recent protests and strikes over wages suggest that there is real fear of a new precariat being created. Profound issues of justice and welfare are raised as the crowd economy replaces security and formality with openness and the absence of a safety net.

Regulations about hiring and firing, protection against accidents or illnesses, and employee voice are vanishing quickly.

For consumers the picture is somewhat different. We live in an on-demand world. You no longer have to buy a weekend house; you can use Airbnb. You don't need to buy a car; you can use Lyft instead. Television viewers use Netflix instead of purchasing DVDs or watching commercial television channels. Parents have Uber drivers pick up their kids from school. When one needs a loan, you can turn to peer-to-peer lending rather than banks. For consumers, then, peer-to-peer marketplaces democratize luxury services by making chauffeurs, chefs, and personal assistants available to perform occasional work once largely done by full-time professionals available only to the wealthy.

But we should not pay attention only to the innovations ushered in by the crowd economy. The important question is the feedback dynamics created by these innovations. Real invention involves transforming both nearby and distant social worlds. To study this, one has to analyze the sequence of events that result in broader transformations. When does a change in one domain produce a ramifying rupture in other locations? For example, does the availability of on-demand transportation mean that young people today are less likely to drive their own cars? And if fewer new cars are being bought by a younger generation, does the auto industry begin to transform itself to provide transportation services rather than simply to make and sell cars? Does the availability of on-demand services for meals, transportation, and travel change how parents raise their children? Does custom delivery of home-cooked meals to the dinner table every night change how families interact? Obviously, these are far-reaching questions to which we do not currently have answers. But if we look back in time at other consequential economic transformations, it is precisely their social and political ramifications that made them so dramatic.

To return to the theme of poisedness, we need to ask when larger structural forces are supportive of individual-level efforts to create novel forms. Specific historical moments offer a menu of available organizational models. Crowdfunding, for example, has been in existence for less than a decade, so that the advantages it provides have not been extensively explored. Will it prove to be a scaffolding that alters the options for entrepreneurially minded people? Will the domains of finance, charitable donations, advocacy, or the arts be crossed in ways that create new kinds of people? And can the concatenation of these differing lines of development offer new possibilities, including the prospect of reliable employment?

At present, crowd-based innovations reflect new tools that people and organizations use to access and harness ideas and resources. It is not yet a general model for organizing social and economic activities. But that does not mean the changes are modest, or that future spillovers won't have effects in distant, unexpected domains. Organizational research that tackles the new kinds of problems ostensibly solved by crowd-based innovations, and their reverberations back into established domains, will need a wider lens than we have seen used thus far. Studying the contents of crowd-generated products, whether Kickstarter-funded films, nonprofit ventures, or new commercial services, and how they are experienced is a necessary step.

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