The Knowledge Economy: Emerging Organizational Forms, Microfoundations and Key Human Resource Heuristics

TEPPO FELIN
Marriott School
Brigham Young University
587 Tanner Building
Provo, UT 84602
801 422-3478 (o), 801 422-0539 (f)
teppo.felin@byu.edu

JOSHUA TOMSIK
Human Resource Management
Citigroup
New York, NY 10022
212 657-4114 (o), 212 657-8155 (f)
joshua.tomsik@citi.com

TODD R. ZENGER
Olin Business School
Washington University, Campus Box 1133
One Brookings Drive
St. Louis, MO 63130-4899
314 935-6399 (o), 314 935-6359 (f)
zenger@wustl.edu

DRAFT --- PLEASE DO NOT CITE WITHOUT PERMISSION

August, 2008

The Knowledge Economy: Emerging Organizational Forms, Microfoundations and Key Human Resource Heuristics

ABSTRACT

Organizations increasingly operate in knowledge and information-intensive settings that require management scholars and HR professionals to fundamentally shift how they think about emerging organizational forms, knowledge processes, governance, and employment relationships. In this paper we first outline an increasingly predominant perspective of the emerging knowledge economy—the 'collective and communal' perspective. While this communal perspective highlights some feasible organizational forms, governance mechanisms and knowledge processes that indeed may facilitate in knowledge creation and transfer, we nonetheless argue that the communal perspective is also missing some key individual-level considerations, or, "microfoundations." Furthermore, matters related to organizational "disaggregation" have also been inadvertently sidelined and need to be reconciled with the communal perspective. Thus, we carefully develop these missing micro-foundations and note their links to the communal perspective of knowledge. We specifically focus on key issues related to incentives and motivation, discretion and ownership, self-selection and interest alignment and human capital heterogeneity — in short, key factors that result in the better utilization of human capital and increased knowledge creation. We illustrate these microfoundations by highlighting the types of employment relations and organizational forms used by Apple in the development of the highly successful iPod. Furthermore, based on our discussion we extrapolate key human resource heuristics. These broad guidelines are meant to aid human resource professionals as they reconsider the emerging employment relationship and associated organizational designs in the knowledge economy.

KEY WORDS: knowledge economy, organizational forms, human resources, microfoundations

RUNNING HEADER: Knowledge, Microfoundations and Human Resources

INTRODUCTION

In a broad range of literatures, even rather disparate and disconnected ones, there is an emerging consensus that economies are increasingly driven by information and knowledge and that we are moving toward a “post-industrial” or “post-bureaucratic” society (Albert & Bradley, 1997; Bell, 1973; Benkler, 2006; Bresnahan et al., 2000; Castells, 2000; Huber, 2004; Machlup, 1980; Powell & Snellman, 2004; Teece, 2003). Indicative of this increased knowledge and information-intensity has been the radical, economy-wide shift toward professional services which indeed are information and knowledge-intensive (e.g., Drucker, 1993; Greenwood & Empson, 2003; Heckscher & Adler, 2006; Maister, 1993; Teece, 2003; Webster, 1995). As a result of these changes, organizational scholars and practitioners have recognized the urgent need to significantly adjust and reconsider their underlying models, assumptions, and practices to account for how work is and will be performed and organized in an increasingly information and knowledge-intensive world (Blair & Kochan, 2000; Boisot, 1999; Castells, 2000; Foss, 2006; Nahapiet, Gratton, & Rocha, 2005; Powell & Snellman, 2004; Teece, 2003). As noted by Zenger and Hesterly, “there is growing evidence of a fundamental shift in the forms that govern economic activity” (1997: 210; cf. Huber, 2004).

Accompanying the emerging knowledge economy are important questions; questions with which human resource (HR) professionals not only need to be familiar, but questions for which HR professionals increasingly also need to have practical answers.[1] These questions include: How will work be organized and performed in the future? What is the emerging nature of the employment relationship? Which of the emerging organizational forms will predominate? Which forms will most effectively create and govern knowledge? How do we best conceive of ‘knowledge management?’ What role will incentives and ownership play in organizations? Addressing these questions, in many ways, defines the strategic work in which HR professionals are engaged (cf. Wright & Barney, 1998). But answering these questions is far from easy as there are various seemingly contradictory trends and differing prescriptions about how to best manage, create, and transfer knowledge. Indeed, as noted by Adler, the “economy’s growing knowledge intensity is pushing the employment relationship in several somewhat contradictory directions” (2001: 220; also see Blair & Kochan, 2000; Cappelli, 2005). Thus, articulating theoretical and practical solutions for managing human resources in the knowledge economy has been problematic.

In this article we first review an emerging approach and perspective on managing and creating knowledge — the “collective or communal perspective.” While this perspective offers feasible solutions (organizational forms and governance mechanisms) for creating and managing knowledge, we note that some critical “microfoundations” are missing. Thus we theoretically and practically underpin the communal knowledge perspective with these microfoundations. We specifically highlight key individual-level considerations that are central to knowledge production, considerations that currently are sidelined in this extant communal perspective. Given the increasingly central role of HR professionals in the management of knowledge, we also extrapolate key HR heuristics implied by our discussion of the microfoundations of knowledge. We highlight heuristics which offer broad guidance to HR professionals as they reconfigure and design jobs, and consider new organizational forms, knowledge processes and HR practices for the emerging knowledge economy. We illustrate our discussion of microfoundations and knowledge creation with a short case example, involving Apple’s development of the iPod.

KNOWLEDGE AND COMMUNAL FORMS OF ORGANIZATION: A PRIMER AND OVERVIEW

An emerging consensus among some scholars suggests that the forms and governance mechanisms best suited for the knowledge economy encompass more than a single organization, but instead encompass collective governance forms such as networks and communities (Adler, 2001; Benkler, 2006; Brown & Duguid, 2001; Castells, 2000; Kogut, 2000; Powell, et al., 1996; Uzzi, 1997). Scholars advocating these communal forms for the knowledge economy argue that “community — particularly in the form of community of practice — is increasingly recognized as the organizational principle most effective in generating and sharing new knowledge” (Adler, 2001: 220; Benkler, 2004). Others have further reinforced this perspective by arguing that “scholars and practitioners see production communities as increasingly important to an information and knowledge-based economy,” and by emphasizing that these “community forms [are] increasingly important to solving problems and sharing knowledge” (O’Mahony and Ferraro, 2007: 2; Powell & Snellman, 2004). This communal perspective emphasizes that collective levels are the key locus of knowledge creation and production (see Table 1). The specific organizational forms advocated by this approach include: “communities of practice” (Brown & Duguid, 2001; Wenger, 1999; Wenger et al., 2002) and “collaborative communities” (Adler, Kwon & Heckscher, 2007; Heckscher & Adler, 2006; Nahapiet, Gratton, & Rocha, 2005; O’Mahony & Ferraro, 2007), and more broadly “governance in community forms” (for a recent overview, see O’Mahony & Ferraro, 2007). More generally, the collective and communal perspective envisions the emergence of a “network society” functioning as the central backbone of the knowledge and information economy (for overviews, see Benkler, 2006; Boisot, 1999; Castells, 2000; Powell, 1990).

Insert Table 1 about here

The emerging focus on communal and other higher levels of organizing is anchored in the logic that the complexity and scope of information and knowledge renders organizations, let alone the individuals, incapable of housing and producing critical knowledge (see Boisot, 1999; Castells, 2000; Kogut, 2000; Lee & Cole, 2003). The collective and distributed nature of forms such as alliances, networks, and various communal and other higher levels are required to assemble disparate knowledge and to allow for more optimal knowledge creation (Adler, 2001: 228; Kogut, 2000; Powell et al., 1996). Thus, it is argued, the relevance of the organization itself may increasingly be diminished and organizational boundaries increasingly may be irrelevant. That is, inter-organizational and communal activity, it is argued, increasingly shapes knowledge production and thus leaves organizational boundaries highly “permeable” (Powell et al., 1996: 143), even superfluous, as network and community forms are needed to garner knowledge from disparate and distant sources (Freeman & Audia, 2006; Nahapiet et al., 2005).

Central to the collective and communal perspective are matters of culture, shared identity, and more generally, social interaction (Adler, 2001; Kramer & Tyler, 1996; Wenger, 1999; Uzzi, 1997). Specifically, knowledge is created and produced in social interaction (Adler, 2001: 217; cf. Nahapiet & Ghoshal, 1998) – see Table 1. Given the increasing need for knowledge transfer and information flow, shared and trustful cultural conduits provide the best and most natural mechanisms for ensuring optimal outcomes of knowledge transfer (Adler & Hecksher, 2006). Importantly, trustful social interactions enable the creation of knowledge while exchanges based on price and weak commitments preclude the necessary social exchange and knowledge sharing required to create new knowledge.

Market-mechanisms such as incentives and ownership are generally eschewed from this collective or communal perspective (Benkler, 2006; cf. Adler, 2001). Specifically, it is argued that a focus on market-mechanisms such as exchange, competition and incentives unnecessarily creates adversarial and competitive relationships that hinder the much-needed cooperation and sharing that is needed in the knowledge economy (Adler & Heckscher, 2006; Benkler, 2006; Ghoshal & Moran, 1996; Ferraro et al., 2005). Furthermore, market-based mechanisms (such as incentives, competition and self-interest) stifle cooperation and trust within organizations, the very elements necessary for knowledge creation in the knowledge economy (Adler, 2002; Adler et al., 2007; Ghoshal & Moran, 1996; Ghoshal, 2003; Nahapiet, Gratton, & Rocha, 2005). Moreover, communal scholars suggest such market-like mechanisms also encourage corrupt, Enron-like behavior (Adler, 2002; Ghoshal, 2003, 2005). Thus some communal scholarship has argued that the full benefits of collaborative communities and associated creativity and knowledge sharing and creation perhaps can *not* be unleashed under a capitalist market system (Adler & Heckscher, 2006: 67-77; also see Adler, Forbes, & Wilmott: 2007: 8; Benkler, 2006; Grey & Wilmott, 2005). For example, Adler argues that the emerging community forms of knowledge production "undermine the legitimacy of the capitalist form of society" (Adler, 2001: 216; also see Adler, chapter 3; also see Benkler, 2006), and thus these scholars specifically call for the types of the communal forms of organizing exhibited by organizations post World War II (see Ferraro et al., 2005: 19). Others call for the collective forms exhibited by traditional community-oriented models of "pre-capitalist societies" (see Adler & Heckscher, 2006: 14).

The communal perspective of knowledge, then, in effect suggests a "new modality of production: commons-based peer production," as opposed a modality of production based on "property rights" and "market-based" mechanisms of production (Benkler, 2006: 60) — see Table 1. The emphasis on the "commons," and the explicit de-emphasis of property rights and exchange, has naturally lent itself to focusing on the virtues of open source-like forms of organization, which specifically move us "from a firm-based to a community-based model of knowledge creation" (Lee & Cole, 2003; also see Benkler, 2006; Weber, 2004 or O'Mahony & Ferraro, 2007). Open source models are closely linked with such organizational forms as "collaborative communities" (Heckscher & Adler, 2006) and "communities of practice" (Brown & Duguid, 2001; Wenger, 1999). Exchange, self-interest, and incentives give way to more virtuous collaboration and social interaction based on the open source-logic of organizing, a form of more democratic governance that meets communal ideals where knowledge is shared and transferred more freely, with trust providing a key organizing principle (Adler & Heckscher, 2006: 60; Benkler, 2002; Lee & Cole, 2003; O'Mahony & Ferraro, 2007).[2]

Some Problems with the Communal Perspective of Knowledge: The Need for Microfoundations

The prescriptions toward collective and communal forms of organizing in the knowledge economy seem persuasive at first glance. The communal perspective appears to not only be consistent with the observation of increasing amounts of inter-organizational activity (Nisiguchi, 1994; also see Adler, 2001; Gulati et al., 2000), but it also appears to solve the problem of knowledge dispersion (cf. Hayek, 1945). *However*, the collective and communal perspective subtly masks and buries the "microfoundations" of knowledge creation (Felin & Foss, 2005; Felin & Hesterly, 2007). By microfoundations we mean key individual-level considerations that drive knowledge creation — namely, individual and expert discretion, motivation, incentives, abilities, and interests. In short, the collective and communal perspective has subtly (though perhaps inadvertently) shifted the focus away from individual-level considerations that clearly are fundamental to our understanding of the knowledge economy. Or, put differently, we argue that these microfoundations in essence provide the underlying foundation that makes various communal structures and mechanisms possible. Thus an airing of the microfoundations is particularly critical for understanding organizations and human capital in the knowledge economy characterized by various communal forms of governance.

Two general omissions within the communal perspective highlight the need for a discussion of microfoundations. *First*, by focusing on communities and collectives, and by viewing organizational boundaries as "permeable" and even superfluous, the communal perspective shifts the focus away from not only the important role that organizational boundaries and market mechanisms play in knowledge creation, but also the potential costs and productivity losses associated with large-scale collective or communal action and decision-making. Taken to its logical conclusion, communal perspectives might suggest that the creation and transfer of new knowledge occurs most effectively when organized in one large community and firm, effectively subsuming the market (cf. Coase, 1937; see Adler, 2001; Lee & Cole, 2003; Powell et al., 1996). However, there are significant costs and productivity losses associated with *any* collective and communal production or decision-making. These costs and losses include well-established factors related to: social loafing, group think, deindividuation, social comparison, envy and so forth (e.g., Festinger 1954; Latane et al. 1979; Nickerson & Zenger, 2008; Walster et al. 1973). In short, despite the implicit assumption of communal approaches, as cautioned by Latane et al., (1979), "many hands don't make work light," and this certainly also is the case in the knowledge economy.

Instead, free-riding and social loafing can be a problem even in the most virtuous of communities, thus suggesting clear boundaries and limits to size and scope of organizations and communities (Nickerson & Zenger, 2008). Furthermore, the prescriptions to organize around larger collectives and communities must be reconciled with evidence of "disaggregation" (Zenger & Hesterly, 1997): the significant benefits associated with creating knowledge through smaller, disaggregated organizational forms where high-powered, market-like incentives play an important role in motivating individual effort (Zenger, 1992, 1994; cf. Teece, 2003). While these two trends, communal knowledge creation and disaggregation, are not necessarily incongruous, they nonetheless clearly need to be reconciled conceptually.

Second, the communal and collective perspective does not specify the decision and ownership rights associated with the prescribed collective forms of governance. Instead the perspective assumes that organizational forms such as community or networks will themselves naturally create coherence in individual interests (or, that ownership simply does not matter – Benkler, 2006). Discretion and motivation, and other individual-level factors are subsumed by collective ones. The communal perspective argues that communal mechanisms such as social interaction, culture, and trust in essence create *unified* collective action, decision-making, and consensus (cf. Adler, 2001) a process that Heckscher for example labels "large-scale consensus building" (2004: 161; for further discussion of consensus, see O'Mahony & Ferraro, 2007; cf. Sugden, 2001). Yet, the microfoundations of how this might happen are not specified; for example, how are divergent interests reconciled? Thus, when designing (and prescribing) organizational forms and associated governance mechanisms, nothing is more fundamental than clearly specifying "in *whose interests* an organization should be controlled," and "*how* decisions and policies *ought* to be made, *by whom*, and *for whom*" (we utilize the definition by Greenwood & Empson, 2003: 912, emphasis in original; cf. O'Sullivan, 2000). The collective and communal perspective, then, has not met this basic hurdle of specifying the decision and ownership rights of communal governance, particularly when there are competing interests (and for that matter, competing judgment based on expertise). Thus the prescription to organize around forms such as community and network remains theoretically and prescriptively hard, if not impossible, to implement in practice.

Overall, again, we by no means want to dismiss the role that collective and communal efforts play in knowledge creation. Rather, our contention simply is that there is more going on in the knowledge economy than the emergence of collectives and communities as the key forms of knowledge production. Specifically, we next highlight these missing drivers of the knowledge economy, discussing them under the label of "microfoundations." We define microfoundations as the key underlying individual-level drivers that shape knowledge creation and collective knowledge-related outcomes. Our focus on microfoundations, then, can also be seen as an effort on our part to provide foundations for explaining the origins and emergence of collective and communal knowledge outcomes.

DISAGGREGATION, THE MICROFOUNDATIONS OF KNOWLEDGE AND HR HEURISTICS

The image of a knowledge economy organized as a networked community must be reconciled with a clear trend toward disaggregation and disaggregated organizational forms (Zenger & Hesterly, 1997). Organizational disaggregation, in the broadest of terms, means not only that organizational size is declining (both sub-unit and whole) (Brynjolffson, 1994), but also that purposeful, organizational and entrepreneurial activity is rapidly increasing (Bhide, 2000; Coleman, 1991; Perrow, 1991). Furthermore, entrepreneurial activity, for example as measured by new business filings, has radically increased (Bhide, 2000; Birch, 1987; cf. Baumol, 2002). Organizational disaggregation is further magnified by significant increases in temporary employment relationships (Barker & Christensen, 1998) including out-sourcing (Coyle-Shapiro et al., 2006), and the increased use of various contingent and freelance work arrangements (Teece, 2003). The bottom line of disaggregation is that individuals increasingly work in smaller organizations and increasingly under various non-traditional employment relations and organizational forms.

Organizational disaggregation in the knowledge economy is driven by information technology and other enabling tools that allow individuals to coordinate joint work. Specifically, these tools allow for the individuals that possess disparate expertise and specialization to coordinate via disaggregated and looser 'at will' collective arrangements (Zenger & Hesterly, 1997; cf. Bresnahan et al., 2002). For example, information technology has lessened the need for co-location and direct interaction given the modularization of the interface between various specialized tasks (Bresnahan et al., 2000). Cleaner interfaces in projects involving multiple experts allows for looser structures and coordination that does not rely on direct hierarchy and managerial intervention. In fact, as we will discuss later, hierarchy, authority and managerial intervention increasingly are superseded by organizational forms that capitalize on individual judgment and expertise, via a better alignment of high-powered incentives (Zenger & Hesterly, 1997; cf. Greenwood & Empson, 2003; Teece, 2003) – see Table 1. There are of course boundaries and contingencies to the extent to which this type of disaggregated production and knowledge creation is feasible (see Rossi-Hansberg & Wright, 2007 for an economic perspective on this matter). Nonetheless, the trend toward looser and smaller organization based on treatise appears evident in knowledge and human capital-intensive professional services settings, and also in economies more widely (Teece, 2003; Zenger, 2002; also see Greenwood & Empson, 2003; Maister, 1993). The underlying ethos of organizing, then, increasingly is one of smaller and disaggregated, rather than larger and aggregated, forms (Zenger & Hesterly, 1997). The “treatise”-like relationships (Teece, 2003) between individuals of course do not mean that individuals somehow need to be conceptualized as atomistic entities interacting in markets that are independent of social relationships. Rather, as we will discuss, disaggregation allows for the better imputation and reward of individual effort and ability with outcomes.

The communal approach to knowledge creation, of course, is by no means directly antithetical to organizational disaggregation. Networks and communities co-exist with disaggregated organizational forms. Indeed, they function as necessary complements. However, by focusing only on the benefits of collectives and networks, the communal perspective fails to paint a complete picture of the knowledge economy. In particular, the communal perspective ignores the shortcomings and problems associated with large-scale collective effort and the underlying micro-dynamics that make communal activities possible. For example, the communal approach fails to recognize that there are important costs and downsides to any large-scale collective or communal effort, and that individual-level incentives simply cannot be overlooked. And, furthermore, as recently noted in the networks literature, collective and communal efforts are also equally likely to have rather detrimental consequences (e.g., see recent work on “negative ties:” Labianca & Brass, 2006), resulting in the lack of knowledge sharing and creation. Scholars have consistently noted the problem of free-riding and incentive alignment in collective action (e.g., Olson, 1965), as well as problems with collective reasoning and consensus as a heuristic for decisions (e.g., Sugden, 2001). Yet, these issues seem to be rather ignored by the communal perspective. Additional evidence has also persuasively shown that large-scale collective efforts at creativity and knowledge creation suffer from quite radical (and surprising) productivity and creativity losses compared to individual effort, or efforts in smaller disaggregated forms (cf. Zenger, 1992). Losses associated with communal and collective efforts have also been shown in the context of idea generation and associated knowledge creation (see Stroebe et al., 2001; Stroebe & Diehl, 1994).

Overall, disaggregated forms circumvent some of the free-riding and incentive-related problems that accompany large-scale communal effort. Specifically, the looser organizational structures and relatively small firm sizes allow for the introduction of high-powered market-mechanisms into organizations (cf. Zenger & Hesterly, 1997) and also allow for organizations to significantly benefit from individual expert *discretion* (Foss & Foss, 2002).

Organizational disaggregation, then, provides the general backdrop and trend within which to understand the microfoundations of both the knowledge economy and the communal perspective. In the remainder of this section we identify and explicate the following key microfoundations of knowledge creation in the knowledge economy: 1) high-powered incentives and motivation, 2) discretion and ownership, 3) self-selection and interest-alignment, and, 4) individual and human capital heterogeneity. These microfoundations in effect provide a relatively unexplored undercurrent of the emerging knowledge economy, and further provide much-needed individual-level underpinnings for the extant collective or communal perspective of knowledge production (see Table 1 for an overview). Importantly, these microfoundations also suggest some key HR heuristics: broad guidelines for HR professionals to consider as they design organizations, HR systems, and as they more broadly consider effective and optimal ways to structure the employment relationship in the knowledge economy.[3]

1) High-Powered Incentives and Motivation

The relevance and benefits of market-like, high-powered incentives in organizations has recently been questioned from the collective and communal perspective (see Adler, 2001; Ferraro et al, 2005; Heckscher & Adler, 2006). Nonetheless, the high-powered incentives used by disaggregated organizational forms are central in knowledge creation. Specifically, the disaggregation of organizations, and associated developments in information technology and measurement (Zenger & Hesterly, 1997), have facilitated the increased use of various market-like mechanisms for attracting talent and inducing individual effort to create and share knowledge. Put differently, as compared by Zenger and others — smaller, disaggregated organizations allow for a better imputation of individual effort and ability with reward (Zenger, 1992, 1994; cf. Olson, 1965: 27-29).

The problems of larger collectives and communities with regard to incentives and motivation are counterintuitive and surprising, thus requiring further explanation. We make two observations. *First*, the reason that "the market mechanism fails to optimize the production and distribution of knowledge" (Adler & Hecksher, 2006: 29) may be closely associated with the fact that within large organizations the use of market mechanisms to reward talent is severely constrained due to problems of social comparison costs and envy (Zenger, 1992, 1994). Thus, talented individuals with high-level expertise specifically suffer in larger organizations as they are sub-optimally rewarded and induced (Nickerson & Zenger, 2008), even though their contributions are the most critical input to collective knowledge outcomes (Teece, 2003; cf. Felin & Hesterly, 2007). Research in fact suggests that in knowledge-intensive settings highly talented individuals leave to join or start smaller organizations because small organizations offer more market-like incentives and better impute effort and ability with reward (Zenger, 1994); and, the mobility of these individuals has rather detrimental consequences for the knowledge outcomes of organizations (Felin & Hesterly, 2007; Somaya et al., 2007). Thus, overall, the migration to more "collective" organization has as much to do with the power of market-based mechanisms that accompany disaggregation as it does the power of collective forms.

The fact that high-powered incentives operate more effectively in smaller organizations does not obfuscate the need for larger collective and communal arrangements (cf. Jones, Hesterly, & Borgatti, 1997). That is, smaller organizations can be linked into collectives through loose arrangements (e.g., alliances) which allow for the exchange and production of new knowledge. But, these ties are also importantly delineated by the underlying contracts which specify decision, ownership and appropriation rights (cf. Jones et al., 1997). Put differently, the rise of smaller, disaggregated forms of organization are a complement to the distributed knowledge production in communities, specifically as these small organizations naturally also have alliances and are involved in other communal arrangements. The important point is that the nested individual-level factors, and associated high-powered incentives, prove a critical microfoundation that allows for these collective arrangements to arise in the first place.

Second, we should further note that we do not doubt that there are important benefits associated with distributed, communal forms of knowledge production, such as open source forms of production (Lee & Cole, 2003; Moon & Sproull, 2002; O'Mahony & Ferraro, 2007). But, while collective and communal scholars argue that open source organizing provides an apt example of altruistic, communal knowledge creation where self-interest and incentives are not important (Benkler, 2006; Lee & Cole, 2003: Moon & Sproull, 2002; Weber, 2004), we view this characterization as overly simplistic. Open source can also be seen as a direct instantiation of the power of disaggregation and high-powered incentives in the production of knowledge (specifically, see Lerner & Tirole, 2002: 198-199). As argued by Zenger and Hesterly (1997), information technology has allowed for better coordination between individuals given the increased modularity between various tasks, and for better measurement and rewards of individual contribution. These indeed provide some of the hallmarks of open source production (Lerner & Tirole, 2002). For example, Lerner and Tirole (2002) show and discuss how open source organizing specifically allows individuals to better signal their abilities to a wider community and market. As a result expert talent is quickly rewarded both through reputational and pecuniary means. Overall, advances in information technology have enabled more aggressive use of high-powered, market-like, individual incentives and these disaggregated organizations then can be linked to more communal structures.

HR Heuristic: Incentives (Still) Matter, A Lot. As HR professionals know, incentives matter. However, individual-level incentives have of late been maligned by organizational scholars (Ferraro et al., 2005; Pfeffer & Sutton, 2007). Nonetheless, when incentives are properly aligned with desired results and individual effort, they provide a powerful motivation, particularly in settings demanding knowledge creation and transfer. Thus a re-consideration of the importance of properly aligning incentives is critical for the knowledge economy, specifically as it is in individuals that key knowledge and expertise is housed and the inducement of individual effort is a key pillar of organizing in the knowledge economy (Teece, 2003). The issue of incentives, of course, was underscored by earlier organizational scholars such as March and Simon (1954) in their discussion of “inducements and contributions” (83-100), even providing one of the key considerations for organizational viability and performance. The need to understand “inducements and contributions” has not lessened in the intervening years since March and

Simon's classic book *Organizations* was written, indeed, the need to understand how high-powered incentives might be appropriately specified has increased in the knowledge economy.

2) Discretion and Ownership

A key insight, from the perspective of microfoundations, is that individuals are central in the knowledge creation process and that they in effect are the locus of knowledge and discretion. Experts and expertise is the key currency of the knowledge economy, and expert *discretion* provides perhaps *the* critical source of knowledge in organizations (Teece, 2003; also see Greenwood & Empson, 2003: 917). An important microfoundation then has to do with the autonomy and discretion that is given to experts and individuals (cf. Foss & Foss, 2002). While we emphasize expert discretion, the communal perspective specifically focuses on collective consensus, specifically where decisions and associated actions originate from social interaction and professional consensus (Adler et al., 2007; O'Mahony & Ferraro, 2007). The distinction between a focus on individual expertise and collective consensus is an important one to make. Again, the (often implicit) assumption from the communal perspective is that the collective somehow jointly gets things right. Hence the key mechanism the communal perspective focuses on is the interaction of individuals (a "wisdom of crowds" type of argument) rather than the underlying expertise of individuals. This of course is not to say that consensus-building is unimportant in the knowledge economy, rather our point simply is that a sole focus on the collective factors misses and abstracts (and assumes) away the underlying capability that resides in individual and expert discretion (Felin & Hesterly, 2007).

An "exemplary form of governance" for capitalizing on expert and individual discretion and knowledge is the partnership model (Greenwood & Empson, 2003: 909; Teece, 2003). Specifically, the partnership model not only explicitly recognizes that "the knowledge of individuals represents *the* key income-generating asset" of organizations (Greenwood & Empson 2003: 917), but also gives maximum latitude and discretion to these individuals (e.g., partners) in decision-making (Maister, 1993). The partnership model is a more market-like, targeted organizational form that not only taps into the highly specialized discretion, skills and capabilities of individuals but also more directly imputes effort and talent with reward (Teece, 2003). Ownership and associated rights to the value created are consolidated with partners, who also have wide discretion about the types of actions that should be taken.

Furthermore, some of the problems traditionally associated with the principal-agent model have in part been resolved by these very partnership models, specifically as the principal increasingly is the agent (see Greenwood & Empson, 2003). Specifically, traditional problems of team production and collective action are resolved as monitoring internally within the firm is less costly than monitoring by an external principal. Traditional problems of hierarchical monitoring and inducement of the 'correct' actions manifest in shareholder-owned companies are mitigated as the partnership form gives experts wide discretion and also couples that discretion directly with rewards and accountability. This tight coupling of individual discretion, ownership, accountability and outcomes allows partners increased autonomy and discretion on the types of activities that should and can be taken, and, responsibility and commensurate rewards for the outcomes (cf. Foss & Foss, 2005). This alignment is important as it is these very individuals who also have the capabilities and knowledge to make the best decisions (Teece, 2003).

Problems of ownership and appropriation are also better resolved via partnership and other disaggregated forms of organization, despite the fact that information and knowledge diffuse readily (Liebeskind, 1996). In contrast, the communal perspective specifically argues that matters of ownership and property increasingly are irrelevant in the knowledge economy: property rights give way to the "commons" (see Benkler, 2002, 2006). Related to property rights, it is specifically argued that "the salient characteristic of commons, as opposed to 'property,' is that no single person has exclusive control over the use and disposition of any particular resource in the commons" (Benkler, 2006: 60). Knowledge, it is argued, cannot be meaningfully owned. However, while imputing individual rights to a specific element of knowledge (outcome) may be impossible, individuals maintain ownership over the critical factors that generate knowledge: themselves. Since individuals still have discretion over where to work, how hard to work and so forth, these property rights are central to creative production in the knowledge economy and thus, more than ever, ownership of discretionary capabilities and one's self are a central engine for creating knowledge (cf. Foss & Foss, 2005).

A central point here is that discretion and autonomy and ownership in a knowledge economy, quite counterintuitively, needs to be pushed down toward lower levels, where the organizations key knowledge assets reside. Partnership and other disaggregated forms of organization in professional services have admirably begun to address these issues (Teece, 2003). Pushing decision-making and discretion to this level again may be quite counterintuitive, as collective and communal scholars have focused more on higher-level consensus-building and social interaction as the key source of knowledge.

HR Heuristic: Let Employees Decide and Own. A key feature of our microfoundational approach is to note that knowledge resides in individuals and experts. Thus, ownership and discretion are central to knowledge production and ownership, while far from problematic in the case of knowledge, still matters. Rather than resort to the 'commons,' ownership for decisions and the discretion to make choices are central in the knowledge economy. While knowledge production is indeed about knowledge sharing and recombination, the most important work is cognitive and occurs within the minds of individuals. Knowledge production is thus at once both more individualistic and more communal than for instance the production of manufactured goals. Thus while hierarchy may play a more limited role, individual autonomy and high-powered incentives are critical.

3) Self-Selection and Interest Alignment

A third microfoundation of the emerging knowledge economy is that individuals, possessing differing knowledge, skills and abilities, self-select into organizations based on individual values and interests. Specifically, emerging organizational forms increasingly allow for self-selection based on interest both *within* and *across* organizations – that is, expert discretion and abilities drive the organizing process in the knowledge economy (cf. Schneider, 1987). Self-selection *within* organizations means that organizations increasingly allow individuals to choose the types of work in which they engage (Foss, 2003); and, self-selection *across* organizations means that individuals, particularly expert talent, increasingly choose (or establish) different organizational settings, or as agents under loose treatise or contract (rather than formal organizations), work on a project-basis. Consequently, individual interests provide a powerful mechanism of coordination and organizing and knowledge sharing.

This possibility of individual self-selection and organizing based on interests is compounded and accelerated by numerous labor-market trends visible in the emerging knowledge economy, such as, an aging work force, increased information-intensity, relatively strong economies, opportunities for mobility, increased entrepreneurship and other related trends (for an overview, see Brockbank & Ulrich, 2005; Cappelli, 2005; also see Luthans et al., 2006: 4-6). In short, these trends have in essence resulted in an "employees' market," where choices for talented individuals with expertise appear rather plentiful for the foreseeable, long-term future (Bresnahan et al., 2000; Cappelli, 2005). Furthermore, the increased availability of information allows access to information about others' interests, which further compounds and accelerates the self-selection process in organizing.

Self-selection based on interest provides a broad organizing logic and coordination mechanism for the knowledge economy – determining the composition of organizations and teams. While some extant work suggests that *price* is the basic coordination mechanism from a microfoundational perspective (see Adler 2001: 219), and trust and consensus on the other hand is the key lubricant of coordination within the communal perspective (see Table 1)—nonetheless, *interest* and self-selection increasingly provide the key mechanism for thinking about social interaction and associated knowledge creation. People make consequential choices about where to work, how to work, what to work on, with whom to work, whom to trust and so forth (cf. Schneider, 1987). Individuals essentially self-select to work on particular projects or with particular organizations.

It is critical to note that self-selection by interest also provides a highly valuable mechanism for organizations to access project and action viability through a "democratic" sorting process of sorts (see Knudsen & Levinthal, 2007 related discussion of "polyarchy") --- there indeed are some interesting links here between microfoundations and the communal perspective. Specifically, projects and organizational initiatives can be evaluated based on individual interest and expert judgment, leading to collective effort and capitalizing on joint judgment. Projects not deemed feasible or valuable fail to garner sufficient individual support. (The literature on self-managed teams suggests similar intuition: Kirkman & Rosen, 1999.) Of course, these types of "democratic" forms of governance driven by self-selection and interest may leave various, more mundane yet critical, activities *un*accomplished in organizations (cf. Zenger, 2002). But, the logic of self-selection particularly applies to highly-skilled experts and talent, specifically those whose abilities, interests, and effort increasingly provide the key valuable resource of organizations (Teece, 2003). The choices and self-selection of these individuals provides a rough decision-heuristic for which projects should be pursued (and which should not be pursued). Via hierarchy and associated alignment of incentives, the organization of course may intervene to ensure that the more mundane yet critical organizational activities are accomplished. *However*, intervening at the level of project selection (via hierarchy or managerial authority) may not be advisable as the key knowledge is specifically embedded in these experts and individuals. The balance of course between expert discretion and managerial intervention is a fine one that needs to be very carefully considered (Foss et al., 2006; cf. Ewing, 2007).

HR Heuristic: Organize Around Interests. Self-selection is a key feature of the emerging knowledge economy, the opportunity of individuals to self-select based on interests. That is, individuals, particularly specialized experts and talented individuals, prefer choice. Consequently, permitting choice in project assignment elevates individual effort and optimizes the utilization of the knowledge embedded in that very talent. Self-organization by interests — both across (through labor markets) and within organizations (through project organization and selection) — provides an important underlying consideration that HR professionals need to take into account when reconsidering emergent employment relations, and when designing jobs and organizational forms.

Management may therefore choose organizational forms such as project-type forms of organization, and other ‘loose’ interactions via treatise that support organizing around interests. For example, organizing by interests may result in “Hollywood”-type models of organizing (Miles et al., 1997) where coordination and interaction is handled via self-selection and potential treatise and project-related events. Individuals interact for shorter periods of time when jointly creating a product and then disband. This type of organization of course is also feasible within organizations, as discussed by Foss (2003; cf. Ewing, 2007) in his research on organizational forms adopted by Oticon. Professional services and the increasingly prevalent partnership models of organizing also naturally tap into the interests of individuals (Teece, 2003).

4) Individual and Human Capital Heterogeneity

The final, key microfoundation highlights the heterogeneity of expertise critical to the knowledge economy (e.g., Bresnahan et al., 2000, 2002; Felin & Hesterly, 2007). This diversity of ability and knowledge is the key ‘raw material’ of the knowledge economy (Teece, 2003). Punctuating the importance of the emerging recognition of talent and the associated need to re-consider practices, Teece notes that "the nature of the firm itself must change if the full potential of top talent is to be unlocked" (2003: 895). As Teece further notes, while differences and heterogeneity in underlying human capital have naturally not increased over time, talent and specialized expertise have become more central in the knowledge economy. Talent attracts clients, attracts others with talent, and defines an organization’s reputation. The importance of this “rainmaking” ability is particularly important in professional services organizations, for example, in the investment banking industry. As Chacar and Coff (2001) find, when top investment bankers leave highly prestigious organizations, a bulk of key customers *and* a bulk of key talent leave to join the new organization. Thus, over time stratification and sorting based on ability and expertise increases within the economy (cf. Garicano & Hubbard, 2007), with information technology being an important enabler (Bresnahan et al., 2000, 2002).

Highlighting human capital heterogeneity fruitfully adds to the communal and collective perspective, specifically by expanding the level of analysis. In other words, the central point is that to understand why a particular organization performs better, one must inherently first look at the role that individual level-capabilities and expertise play in shaping collective capabilities and performance (Felin & Hesterly, 2007). The underlying, implicit assumption of the communal perspective is that individuals are roughly homogeneous (given the focus on collective constructs – for an overview see Felin & Hesterly, 2007) and it is more in the situational and communal relationships, rather than the individuals themselves, that knowledge is created (cf. Davis-Blake & Pfeffer, 1989). The assumption of individual and human resource homogeneity of course remains quite subtle and implicit. It is reflected more in the *emphasis* on higher levels and relationships rather than in any explicit statements that individuals no longer matter (though see Murmann et al., 2003: 21). But, the bottom-line is that the focus on higher collectives and various relationships subtly sidelines questions such as: *who* creates and captures value, *who* has or creates relationships with *whom*, etc. Important matters such as interest and self-selection are also implicitly assumed away (Nahapiet & Ghoshal, 1998).

In sum, while there has been some tendency to discount (or, at least, not emphasize) the role of talent and human capital heterogeneity in organizational outcomes (see Pfeffer & Sutton, 2006: 85), we suggest that such heterogeneity provides an important component and driver of the knowledge economy (Teece, 2003). The logic, from the communal perspective, of steering away from “rainmakers” and top talent is specifically rooted in the matters of social comparison and envy: rewarding the extreme performers for high performance creates social comparison costs that complicates efforts to motivate (Nickerson & Zenger, 2008; Zenger, 1992). However, recognizing that firms incur costs in luring talent certainly does not mean that efforts to do so are misguided. Furthermore, disaggregated forms of organization have allowed for a better alignment between individual abilities and effort and organizational outcomes.

HR Heuristic: The Knowledge Economy is a Talent Economy. A critical underlying pillar of the microfoundational approach for the emerging knowledge economy, as discussed above, is the recognition that individuals are the locus of knowledge, discretion, expertise, and activity. Consequently, talent and expertise are critical resources, and accessing talent is a critical capability for generating competitive advantage in the knowledge economy (Barney & Wright, 1998; cf. Gardner, 2002). In fact, knowledge management itself might be equated with talent management. Furthermore, one can also suggest that the knowledge economy, while undoubtedly full of collaboration and networks, is first and foremost an economy of talent and expertise. Thus, while significant HR effort (from a collective and communal perspective) is spent on thinking about teams, relationships, community and networks, and associated systems, processes, and configurations for managing knowledge — and rightfully so — nonetheless our discussion of microfoundations suggests that HR time and resources should also focus on hiring and retaining individuals with the talent and expertise rewarded by the organization. Communal and other structures, then, in essence take care of themselves when the proper individuals are hired and retained.

An Illustrative Case: The Development of the Apple iPod

To illustrate how the above microfoundations and associated employment relations and organizational forms practically play a role in the knowledge economy, we briefly use an illustrative case: the development of the Apple Inc’s highly successful music-player, the iPod.[4] Concurrent to highlighting this short case example we note important links to our discussion of microfoundations and knowledge.

Self-Selection and Interest Alignment

Understanding the development of the iPod at Apple would scarcely be possible without consideration of the key individuals responsible for creating it, such as Anthony Fadell. Fadell was a sought-after engineering graduate from the University of Michigan; upon graduating he had already started three electronics companies. After graduation Fadell joined a hot Silicon Valley start-up, General Magic. While still in his twenties, Fadell was hired away by the Dutch conglomerate, Phillips to become a VP leading the new mobile computing group. During this time period Fadell began to envision early forms of what later became the iPod: a small, pocket-sized electronic device connected to a jukebox-like software platform. When it became apparent to Fadell that Philips was not the right environment in which to develop this technology, Fadell began to shop his idea around. He first agreed to join Internet media company RealNetworks Inc, but then resigned within six weeks. Thereafter, he started his own new firm to capitalize on the idea, Fuse Networks. Eventually his idea sparked Apple’s interest, a company whose products Fadell loved and whose complementary assets provided an opportunity to quickly launch the envisioned product.

Employment Relationship and Autonomy

Interestingly, Fadell first worked on the concept with Apple as an independent contractor, rather than an employee, of Apple. As discussed by Teece (2003), this type of employment relationship clearly is on the increase for the most valuable employees in the knowledge economy. As a contractor Fadell worked with a small team of Apple engineers to further develop the iPod concept. Once Apple and

Steve Jobs showed a commitment to the iPod project, Fadell re-negotiated his contract and became an employee of Apple; specifically a Senior Vice President with responsibility for the iPod design team. Interestingly, the final development of the iPod relied on a mixed community of individuals and companies. Specifically, key components of the iPod were developed in conjunction with former Apple engineers who had launched their own start-ups (such as PortalPlayer and Pix).

Disaggregation

The type of organizational form used to develop the iPod aptly illustrates the power that disaggregated forms have for tapping into high-powered market-like incentives that may not readily be available within large organizations (Zenger & Hesterly, 1997). The development of the iPod most certainly can also be understood in communal and collective terms --- after all, numerous start-ups and contractors had a hand in the development of the iPod. Nonetheless, the story would be rather incomplete without consideration of the unique organizational forms and employment relations that incentivized and motivated particular talented individuals, such as Anthony Fadell and other former Apple employees, to contribute to the iPod's success.

Incentives and Ownership

The iPod, of course, became an overwhelming success and also by many accounts revived Apple's stock from its post new economy slump. The device eventually garnered more than 90% of the digital player market. In January 2008 Apple reported the highest quarterly revenues and earnings in its history, $9.6 billion in revenues with a net quarterly profit of 1.58 billion; 42% of the revenues were accounted for by the iPod.

And Fadell? The structure of his employment relationship, from initial contractor to Senior Vice President, allowed him to also appropriate and participate in the success of the product, perhaps in ways that traditional employment relations may not have. Complete information on compensation of course can be hard to garner, but publicly available documents of recent compensation show that between 2006 and 2008 Fadell sold Apple stock valued at $20 million and he exercised stock options valued at $9 million and was granted additional stock options valued at over $9 million: a total compensation of $38 million. Former Apple employees also benefited handsomely from the iPod’s success. For example, PortalPlayer, the company started by former Apple engineers, was able to raise significant amounts of venture funding — with founders locking in significant ownership stakes — and eventually the company went public. In short, key individuals were able to both create value and also appropriate it given that these individuals now were involved in the project via various disaggregated forms: smaller spin-off companies, as contractors, and so forth.

In all, each of the microfoundations of knowledge can be seen as playing an important role in the case of Anthony Fadell, Apple and the development of the iPod. While the case of course can be discussed in communal terms, nonetheless it is clear that the specific issues *de*-emphasized by the communal approach — for example: high-powered incentives, ownership, contracts — are also absolutely central to the story.

CONCLUSION

There have been increasing calls for “HR professionals to be fully versant about external business realities” and the “fundamental driving forces of business” (cf. Brockbank & Ulrich, 2002: 489). The emerging knowledge economy, and the seemingly contradictory conceptualizations of the organizational forms and employment relations that will create knowledge, most certainly are among these key "external realities" in which HR professional should be fully versant, particularly given the increasingly critical role of HR professionals in the management of knowledge and the design of work and organizations. We have thus discussed an emerging perspective of the knowledge economy — the collective or communal perspective (Brown & Duguid, 2001; Castells, 2000; Heckscher & Adler, 2006; Lee & Powell, 2003; Powell, 1990). We have specifically explicated the key microfoundations that (should) underpin this perspective and further also discussed the underlying microfoundations that underpin the knowledge economy more generally. The focus on the microfoundations of knowledge, in short, means that understanding the individual-level factors of knowledge creation — including interests, self-selection, motives, abilities, and incentives — is fundamental to understanding collective and communal knowledge outcomes. We have also delineated important HR heuristics based on our discussion of microfoundations, in an effort to provide broad guidance to HR professionals as they consider how to best conceptualize the emerging employment relationship and how to best optimize the organizational forms that create and govern knowledge.

TABLE 1

KNOWLEDGE AND MICROFOUNDATIONS

Key Dimensions	**COLLECTIVE AND COMMUNAL PERSPECTIVE**	**UNDERLYING MICROFOUDATIONS OF KNOWLEDGE PRODUCTION**
Locus of activity and knowledge	Higher, collective levels, community	Disaggregation, nested levels, individuals
Emerging forms and governance mechanisms	Networks, communities of practices, collaborative communities	Markets in hierarchy, partnerships, experts, projects
Organizational boundaries	Permeable, giving way to higher collectives	Based on transaction, individual interest
Decision-making	Large-scale consensus-building	Expert and individual discretion
Key conceptions of the market (in hierarchy)	Social embeddedness, and problem of incentives and competition	Invisible hand mechanism
Modality of production	Commons	Property rights and individual knowledge
Idealized metaphor and form	Family and pre-capitalist society, community of practice	Market and disaggregated forms (for example, partnerships)
Organizing logic	Social interaction and culture	Self-selection and interest
Problems	Social loafing, boundaries, incentives	Interest alignment
Social interaction based on	Trust	Results, interests and self-selection
Conception of self	Interdependent with the social, problem of the "self"	Core self with interests and preferences and expertise
Ownership	Hard to conceptualize for knowledge – no ownership	Individual imputation and appropriation of residual rights central to collective effort

REFERENCES

Adler, P. (2001). Market, hierarchy, and trust: the knowledge economy and the future of capitalism. Organization Science, 12, 215-234.

Adler, P. (2002). Corporate scandals: It’s time for reflection in business schools. Academy of Management Executive, 16, 148-149.

Adler, P. & Heckscher, C. (2007). The firm as a collaborative community: Reconstructing trust in the knowledge economy. Oxford University Press.

Adler, P. S., Kwon, S. (2007). Community, Market, and Hierarchy in the Evolving Organization of Professional Work: The Case of medicine. In Muzio, D., Ackroyd, S., Chanlat, J. (Ed.), *Redirections in the Study of Expert Labour* London: Plagrave-Macmillan.

Adler, P., Kwon, S.W., & Heckscher, C. (2007). Professional work: The emergence of collaborative community. Organization Science, forthcoming.

Albert, S. & Bradley K., (1997). Managing knowledge: experts, agencies, and organizations. Cambridge: Cambridge University Press.

Barker, K., & Christensen, K. (eds) (1998). Contingent work. ILR Press: Ithaca: New York.

Blair, M.M., & T. A. Kochan (Eds.). (2000). The new relationship: Human capital in the american corporation. Washington, DC: Brookings Institution Press.

Bell, D. (1973). The coming post-industrial society. New York: Basic Books.

Benkler, Y. (2002). Coase’s penguine, or Linux and the Nature of the Firm. Yale Law Review, 112: 369-.

Benkler, Y. (2004). Sharing nicely: on shareable good and the emergence of sharing as a modality of economic production. Yale Law Review, 114: 273-.

Benkler, Y. (2006). The wealth of networks: How social production transforms markets and freedom. Yale University Press.

Bhide, A. (2000). The origin and evolution of new businesses. Oxford University Press.

Birch, D. (1987). Job creation in America: How our smallest companies put the most people to work. New York: Free Press.

Boisot, M. (1999). Knowledge assets: securing competitive advantage in the information economy. Oxford: Oxford University Press.

Bovens, M. (1998). The quest for responsibility: accountability and citizenship in complex organizations. Cambridge: Cambridge University Press.

Bresnahan, T. F., Brynjolfsson, E., and Hitt, L. M. (2000). Technology, organization, and the demand for skilled labor. In M. M. Blair & T. A. Kochan (Eds.), The New Human Relationship: Human Capital in the American Corporation: 145-193. Washington, DC: Brookings Institution Press.

Bresnahan, T., Brynjolfsson, E. and Hitt, L. (2002). Information technology, workplace organization, and the demand for skilled labor: firm-level evidence. Quarterly Journal of Economics, 117, 339–76.

Brockbank, W., and Ulrich, D. (2005).Higher knowledge for higher aspirations." Human Resource Management 44(4): 489-504.

Brown, J.S. & Duguid, P. (2001). Knowledge and organization: A social-practice perspective. Organization Science, 12, 198-213

Brynjolfsson, E. Malone, T. Gurbaxani, V., & Kambil, A. (1994). Does information technology lead to smaller firms. Management Science, 40, 1628-1644.

Cappelli, P. (1999). The new deal at work. Boston: Harvard Business School Press.

Cappelli, P. (2000). Market-mediated employment: the historical context. In Blair, M.M., & T. A. Kochan (Eds.), 66-101; The new relationship: Human capital in the american corporation. Washington, DC: Brookings Institution Press.

Cappelli, P. (2005). Will there really be a labor shortage. Human Resource Management, 44, 143-149.

Castells, M. (2000). The rise of the network society. Malden, MA: Blackwell Publishing.

Chacar, A., & Coff, R. (2001). Deconstructing a knowledge-based advantage: Rent generation, rent appropriation and “performance”. In R. Bresser , D. Heuskel, & R. Nixon (Eds.), Winning Strategies in a Deconstructing World. John Wiley & Sons.

Coff, RW. (1999). When competitive advantage doesn't lead to performance: The resource-based view and stakeholder bargaining power. *Organization Science* 10: 119-133.

Coff, R. (2008). The co-evolution of rent appropriation and capability development. *Goizueta Business School, Emory University Working paper***.**

Clark, G. (2007). Farewell to alms: A brief economic history of the world. Princeton University Press.

Coleman, J. (1991). Constructed organization: first principles. Journal of Law, Economics, & Organization, 7, 7-23.

Coleman, J. (1990). Foundations of social theory. Cambridge, MA: Harvard University
Press.

Conlin, M. (2002). Now it's getting personal. Business Week, 12/16/2002.

Coyle-Shapiro, J. & Morrow, P. (2006). Organizational and client commitment among contracted employees. Journal of Vocational Behavior, 68, 416-431.

Davis-Blake, A., & Pfeffer, J. (1989). Just a mirage: The search for dispositional effects in organizational research. Academy of Management Review, 14, 385– 400.

Deci, E. L., & Ryan, R. M. (1985). Intrinsic motivation and self-determination in human behavior. NewYork: Plenum.

Drucker, P. (1993). Post-capitalist society. New York: Harper Business.

Dyer, L. & Reeves, T. (1995). Human resource strategies and firm performance: what do we know and where do we need to go? International Journal of Human Resource Management, 6, 656-670.

Ellingson, T. (2001). Myth of the noble savage. Berkeley: California University Press.

Empson, L, & Chapman, C (2006). Partnership versus corporation: Implications of alternative forms of governance in professional service firms. Research in the Sociology of Organizations, 24: 145-176.

Ewing, J. (2007). No-cubicle culture. Business week, August, 20, McGraw-Hill.

Felin, T. & Foss, N. (2005). Strategic organization: a field in search of micro-foundations. Strategic Organization, 3, 441-455.

Felin, T. & Hesterly, W. (2007). The knowledge-based view, nested heterogeneity, and new value creation: philosophical considerations on the locus of knowledge. Academy of Management Review, 32, 195-218.

Ferraro, F., Pfeffer, J, and Sutton, R.I. (2005). Prescriptions are not enough. Academy of Management Review, 30, 32-35.

Foss, N.J. (2003). Selective intervention and internal hybrids: Intepreting and learning from the rise and decline of the Oticon spaghetti organization. Organization Science, 14: 331-349.

Foss, N.J. (2006). Strategy, economic organization, and the knowledge economy. Oxford University Press.

Foss, N. (2007). The emerging knowledge governance approach: challenges and characteristics. Organization, 14, 29-52.

Foss, K., & Foss, N.J. (2002). Authority and discretion: Tensions, credible delegation, and the implications for new organizational forms. Copenhagen Business School, Working paper.

Foss, K., & Foss, N.J. (2005). Resources and transaction costs: How property rights economics furthers the resource-based view. Strategic Management Journal, 26, 541–553

Gardner, T. M. (2002). In the trenches at the talent wars: Competitive interaction for scarce human resources. Human Resource Management, 41, 225-237.

Garicano, L. (2000). Hierarchies and the organization of knowledge in production. Journal of Political Economy, 108: 874–904.

Garicano, L. & Hubbard, T. (2007). The return to knowledge hierarchies. NBER working papers 12815.

Ghoshal, S. (2003). Business schools share the blame for Enron. Financial Times, July 17.

Ghoshal, S. (2005). Bad management theories are destroying good management practices.
Academy of Management Learning and Education, 4: 75-91.

Ghoshal, S. & Moran, P. (1996). Bad for practice: A critique of the transaction cost theory. Academy of Management Review, 21, 13-47.

Gibson, D. E. (2003). Developing the professional self-concept: Role model construals in early, middle, and late career stages. Organization Science, 14, 591-612.

Greenwood, R. & Empson, L. (2003). The professional partnership: Relic or exemplary form of governance. Organisation Studies, 24: 909-933.

Gulati, R., Nohria, N., & Zaheer, A. (2000). Strategic networks. Strategic Management Journal, 21, 203-215.

Hayek, F.A. (1945). The use of knowledge in society. The American Economic Review, 35, 519-530.

Hedstrom, P., & Swedberg, R. (1998). Social mechanisms: An introductory essay. In P. Hedstrom & R. Swedberg

(Eds.), Social mechanisms: An analytical approach to social theory, 1–31. Cambridge: Cambridge University Press.

Heckscher, C. & Adler, P. (2006). The firm as collaborative community: The reconstruction of trust in the knowledge economy. Oxford University Press.

Hounshell, David A. (1984). From the american system to mass production, 1800-1932. Baltimore: The Johns Hopkins University Press.

Huber, G. P. (2004). The necessary nature of future firms. Sage Publications: London, U.K.

Judge, T. A., & Ilies, R. (2004). Is positiveness in organizations always desirable? Academy of Management Executive, 18, 151-155.

Jones, C., Hesterly, W.S., & Borgatti, S.P. 1997. A general theory of network governance: Exchange conditions and social mechanisms. Academy of Management Review, 22: 911-945.

Kahney L. (2004). Inside Look at Birth of the iPod. *Wired Magazine*.

Keeley, L. (1997). War before civilization: The myth of the peaceful savage. Oxford University Press.

Kirkman, B. L., & Rosen, B. (1999). Beyond self-management: Antecedents and consequences of team empowerment. Academy of Management Journal, 42, 58–74.

Knudsen, T. & Levinthal, D. (2007). Two faces of search: alternative generation and alternative evaluation. Organization Science, 18, 39-54.

Kogut, B., (2000). The network as knowledge: Generative rules and the emergence of structure. Strategic Management Journal, 21, 405– 425.

Kramer, R.M., & T.R.Tyler, eds. (1996).Trust in organizations: Frontiers of theory and research. Sage Publications, Thousand Oaks, CA.

Krueger, J. I., & Funder, D. C. (2004). Towards a balanced social psychology: Causes, consequences and cures for the problem-seeking approach to social behavior and cognition. Behavioral and Brain Sciences, 27, 313-327.

Labianca, G., & Brass, D.J. (2006). Exploring the social ledger: Negative relationships and negative assymetry in social networks in organizations. Academy of Management Review, 31: 596-614.

Lee, G. K. & Cole, R. E. (2003). From a firm-based to a community-based model of knowledge. creation: The case of the Linux kernel development. Organization Science, 14, 633-649.

Lerner, J. & Tirole, J. (2002). Some simple economics of open source. The Journal of Industrial Economics, 50: 197-234.

Lerner, J. & Tirole, J. (2005). The scope of open source licensing. Journal of Law, Economics, and Organization, 21: 20-56.

Lepak, D. P., & Snell, S. A. (1999). The human resource architecture: Toward a theory of human capital allocation and development. Academy of Management Review, 23, 3-48.

Levy, S. (2006). The perfect thing. *Wired*, November.

Liebeskind, J.P. (1996). Knowledge, strategy and theories of the firm. Strategic Management Journal, 17, 93-107.

Luthans, F. (2002). Positive organizational behavior: Developing and managing psychological strengths. Academy of Management Executive, 16: 57-75.

Luthans, F. & Youssef, C.M. (2007). Emerging positive organizational behavior. Journal of Management, 33, 321-349.

Luthans, F., Yousseff, C.M., & Avolio, B.J. (2006). Psychological capital: Developing the human competitive edge. Oxford University Press.

Machlup, F. (1962). The production and distribution of knowledge in the United States. Princeton University Press.

Machlup F. (1980). Knowledge: its creation, distribution, and economic significance: v. 1. knowledge and knowledge production. Princeton, NJ: Princeton University Press, 1980.

Maister, D. (1993). Managing the professional service firm. New York: Free Press.

March, J. & Simon, H. (1958). Organizations. New York: Wiley

Markoff, J. (2004). Oh yeah, he also sells computers. *New York Times,* April 25.

Miles, R., Snow, C., Matthews, J.A., Miles, G., Coleman, H.J. (1997). Organizing in the knowledge age: Anticipating the cellular form. Academy of Management Executive, 11, 7-20.

Moon, J. Y., Sproull, L. (2002). Essence of distributed work: The case of the Linux kernel. In P. Hinds & S. Kiesler (Eds.), Distributed Work: New Research on Working Across Distance Using Technology: 381-404. Cambridge, MA: MIT Press.

Mokyr, J. (2002). The gifts of Athena: Historical origins of the knowledge economy. Princeton University Press.

Murmann, J.P., H. Aldrich, D. Levinthal, & S. Winter. (2003). Evolutionary thought in management and organization theory at the beginning of the new millennium. Journal of Management Inquiry, 12: 1-19.

Nahapiet, J., & Ghoshal, S. (1998). Social capital, intellectual capital, and the organizational advantage. Academy of Management Review, 23, 242–266.

Nahapiet, J., Gratton, L. & Rocha, H. (2005). Knowledge and relationships: when cooperation is the norm. European Management Review, 2, 3-14.

Nickerson, J. & Zenger, T. (2008). Envy, comparison costs, and the economic theory of the firm. Strategic Management Journal (forthcoming).

Nishiguchi, T. (1994). Strategic industrial sourcing: the Japanese advantage. New York: Oxford University Press.

Olson, M. (1965). Logic of collective action. Cambridge University Press.

O'Mahony, Siobhán & Fabrizio Ferraro, 2007. Governance in Collective Production Communities. Academy of Management Journal 50, forthcoming.

Orlikowski, W.J. (2002). Knowing in practice: Enacting a collective capability in distributed organizing. Organization Science, 13, 249-273.

Osterloh, M. & Frey, B. (2000). Motivation, knowledge transfer and organizational form. Organization Science, 11, 538-550.

O'Sullivan, M. (2000). Contests for corporate control: Corporate governance & economic performance in the United States and Germany. Oxford: Oxford University Press.

Perrow, C. (1986). Complex organizations: A critical essay. McGraw-Hill.

Perrow, C. (1991). A society of organizations. Theory and Society, 10,725-62.

Pfeffer, J. (1997). New directions for organization theory: Problems and prospects. New York: Oxford University Press.

Pfeffer, J., & Sutton, R. (2006). Hard facts, dangerous half-truths and total non-sense: Profiting from evidence-based management. Harvard Business School Press.

Powell, W. (1990). Neither markets nor hierarchy: Network forms of organization. Research in Organizational Behavior, 12, 295-336.

Powell, W. W., Koput, K. W., & Smith-Doerr, L. (1996). Interorganizational collaboration and the locus of innovation: Networks of learning in biotechnology. Administrative Science Quarterly, 41, 116 –145.

Powell, W. & Snellman, K. (2004). The knowledge economy. Annual Review of Sociology, 30, 199-221.

Romme, A. & Endenburg, G. (2006). Construction principles and design rules in the case of circular design. Organization Science, 17, 287-297.

Rosenbloom, R., & Christensen, C. (1994). Technological discontinuities, organzitional capabilities, and strategic commitments. Industrial and Corporate Change, 3, 655-685.

Rossi-Hansberg & Wright, M.J. (2007). Establishment size dynamics in the aggregate economy. American Economic Review, forthcoming.

Schneider, B. (1987). The people make the place. Personnel Psychology, 40, 437-454.

Somaya, D., Williamson, I.O., Lorinkova, N. (2007). Gone but not lost: The different performance impacts of employee mobility between cooperators and competitors. Academy of Management Journal, forthcoming.

Spender, J. C. (1996). Making knowledge the basis of a dynamic theory of the firm. Strategic Management Journal, 17 (Winter Special Issue), 45– 62.

Stroebe, W., Diehl, M., & Abakoumkin, G. (1992). The illusion of group effectivity. Personality and Social Psychology Bulletin, 18, 643-650.

Stroebe, W. & Diehl, M. (1994). Why groups are less effective than their members: on productivity losses in idea-generating groups. European Review of Social Psychology, 5, 271-303.

Sugden, R. (2001). The logic of team reasoning. Philosophical Explorations, 6: 161-185.

Surowiecki, J. (2004). The wisdom of crowds: why the many are smarter tha the few and how collective wisdom ahpes business, economies, societies and nations. Little, Brown.

Swedberg, R. (2005). Principles of economic sociology. Princeton University Press.

Teece, D. (2003). Expert talent and the design of (professional service) firms. Industrial and Corporate Change, 12, 895-916.

Uzzi, B. (1997). Social structure and competition in interfirm networks: the paradox of embededness. Administrative Science Quarterly, 42, 35-67.

Uzzi, B. (1999). Embeddedness in the making of financial capital: How social relations and networks benefit firms seeking financing. American Sociological Review, 64, 481-505.

Weber, M. (1949). Max Weber on the methodology of the social sciences. (Translated and edited by E. Shils & H. Finch.) Glencoe, IL: Free Press.

Weber, S. (2004). The success of open source. Harvard University Press.

Webster, F. (1995). Theories of information society. New York: Routledge.

Wenger, E., McDermott, R.A., Snyder, W. (2002). Cultivating communities of practice: A guide to managing knowledge. Harvard Business Press.

Wenger, E. (1999). Communities of practice: Learning, meaning, identity. Cambridge University Press.

Williamson, Oliver E. (1985). The economic institutions of capitalism. New York: The Free Press.

Zenger, T.R. (1992). Why do employers only reward extreme performance? Examining the relationship among performance, pay, and turnover. Administrative Science Quarterly, 37, 198-219.

Zenger, T. R. (1994). Explaining organizational diseconomies of scale in R&D: The allocation of engineering talent, ideas and effort by firm size. Management Science, 40, 708 –729.

Zenger, T.R. (2002). Crafting internal hybrids: Complementarities, common change initiatives, and the team-based organization. International Journal of the Economics of Business, 9, 79-95.

END NOTES

---

[1] This article is motivated by the fact that we believe that "knowledge"-related concerns certainly are among those "fundamental driving forces of business" that "HR professionals must be fully versant about" (Brockbank & Ulrich, 2005: 489).

[2] Given the focus on knowledge creation through social interaction, the communal perspective conceives of individuals, related for example to identity, as deeply embedded; an "interdependent self" (see Adler & Heckscher, 2006: 17, 54; cf. Nahapiet et al., 2006) – see Table 1. Specifically, the notion of individual is thus somewhat problematic from a communal perspective as individuals are parts of collectives and their sense of "self," it is argued, is also more about community rather than a meaningful independent "core self" (thus making matters such as self-selection and interests not relevant). The emphasis is specifically placed on the organization and its culture as a "strong situation" which molds individual behavior and interests (see Davis-Blake & Pfeffer, 1989); this emphasis then specifically questions human capital heterogeneity and individuals as the key units that comprise the organization (see Felin & Hesterly, 2007). Overall, the focus on various collective factors has also led to even "question the [very] concept of the individual" (Spender, 1996: 52; also see Adler & Heckscher, 2006).

[3] These HR heuristics are an effort to provide broad guidelines for how to best manage and govern knowledge in the knowledge economy. Rather than highlight specific HR 'practices' that practitioners might directly adopt or implement, we point to HR 'heuristics' – or, rules of thumb. We hesitate to offer specific HR 'practices' as there are many important contextual, task and industry-related contingencies that need to be considered when (re)configuring HR practices and systems; and, given space considerations, explicating all of these contingencies is outside the scope of this paper. That said, we believe that our set of HR heuristics will provide important guidelines for HR practitioners given their strategic role in defining the employment relationship, and their strategic role in organizational design and strategy more broadly. Furthermore, and importantly, these HR heuristics also reinforce certain, obvious HR practices, which however are counter to some of the prescriptions suggested by the communal perspective.

[4] Thanks to Russ Coff for pointing us to this apt example. This case example has been extrapolated from the following sources: Coff, 2008; Kahney, 2004; Levy, 2006; Markoff, 2004.