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Contu, Alessia;Willmott, Hugh
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# Re-Embedding Situatedness: The Importance of Power Relations in Learning Theory

Alessia Contu • Hugh Willmott
*Department of Management Learning, University of Lancaster, Bailrigg, Lancaster, United Kingdom LA1 4YW*
*Judge Institute of Management Studies, University of Cambridge, Trumpington Street, Cambridge, United Kingdom CB2 1AG*
*a.contu@lancaster.ac.uk • h.willmott@jims.cam.ac.uk*

## Abstract

This paper critically addresses the coherence, reception, and dissemination of "situated learning theory" (Lave and Wenger 1991). Situated learning theory commends a conceptualization of the process of learning that, in offering an alternative to cognitive theories, departs radically from the received body of knowledge on learning in organizations. The paper shows how elements of situated learning theory have been selectively adopted to fertilize or extend the established terrain of organizational learning. In this process, we argue, Lave and Wenger's embryonic appreciation of power relations as media of learning is displaced by a managerial preoccupation with harnessing (reified) "communities of practice" to the fulfillment of (reified) corporate objectives. We illustrate our argument by reference to Orr's (1990, 1996) study of photocopier technicians, which is very widely cited as an example of the "new," situated conceptualization of learning in communities of practice. We commend a revitalization of situated learning theory in which learning practices are understood to be enabled and constrained by their embeddedness in relations of power; and, more specifically, by the unstable institutionalization of power relations within capitalist work organizations.

(*Organizational Learning; Power; Situated Learning; Community of Practice*)

## Introduction

Learning has been something of a Cinderella of management theory and practice. In the study of management, it has tended to be treated as a worthy but unexciting topic that is tucked away in introductory courses in organizational behavior. For practitioners, it is associated most closely with training. Until comparatively recently, when learning has been connected directly to corporate performance, competition advantage, and knowledge management—notably through the writings of Peter Senge—attentiveness to "organizational learning" was confined to the margins of study and practice. There it was nurtured by a comparatively small group, amongst whom Argyris and Schon (1978) were two of its more prominent and influential proponents. Current interest in situated learning theory has developed in parallel to concerns with "the learning organization" (e.g., Senge 1990) and "organizational learning" (e.g., Probst and Büchel 1997).

A situated conceptualization of learning has strong affinities with ideas about enculturation and the practical embeddedness of learning processes that are becoming increasingly influential (e.g., Nonaka and Takeuchi 1995). Cook and Yanow (1993), for example, describe learning as "the acquiring, sustaining, and challenging, through collective actions, of the meanings embedded in the organization's cultural artifacts" (Cook and Yanow 1983, p. 384, cited in Weick and Westley 1999, p. 195). Distilled in Lave and Wenger (1991) and popularized by others (e.g., Brown and Duguid 1991), situated learning theory has emerged during the past decade as an alternative to dominant, cognitive perspectives on learning.[1] As Barley (1996, p. xiii) has suggested, the conceptualization of learning as a situated phenomenon "promises to contribute significantly to both occupational and organization studies" as it moves our understanding of learning beyond the narrow confines of established thinking. Even if attention to the latter has lately become merged into a focus upon "knowledge management," the unremitting pace of capitalist development, change, and restructuring ensures a continuing broad interest in "learning in organizations." "Situated learning theory," or at least elements of it, is emerging as a possible vehicle for revitalizing the understanding of, and prescriptions for, how knowledge is developed and organized within work places.

Situated learning theory encourages a focus not just upon cultural and organizational artefacts, but upon the embeddedness of learning practices in power relations, rather than the cognitive contents of individuals' minds. In so doing, it presents an opportunity, but it also poses

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a challenge to established theories of learning. However, as we seek to show, popularized versions of situated learning theory tend to ignore or suppress Lave and Wenger's (1991) understanding that learning processes are integral to the exercise of power and control, rather than external or unrelated to the operation of power relations.

This paper illustrates *how* Lave and Wenger's ideas have been adopted and popularized. To this end, we focus our analysis on their seminal text. Our intention is to highlight and reclaim some key insights of situated learning theory that, we contend, have been marginalized or neglected in its popularization (Brown and Duguid 1991). Orr's (1990, 1996) study of copier technicians is engaged to illustrate how the radical and critical elements in Lave and Wenger's "analytic standpoint" could be mobilized to (re)interpret his findings.

Brown and Duguid (1991), we argue, adopt and disseminate the more conservative aspects of situated learning theory. In particular, they embrace the idea of "communities of practice" as locales of learning and knowledge management and thereby promote "situated learning" as a medium, and even as a technology, of consensus and stability. Challenging and innovative elements of situated learning theory, such as the idea that learning practices are shaped, enabled, and constrained within relations of power, are dimly recognized or discarded. Our concern is to show how, in Lave and Wenger's (1991) original formulation of situated learning theory, certain radical elements of their thinking—the importance ascribed to language, history, and contradiction, for example—are underdeveloped and neglected in their illustrations of learning practices. To demonstrate their relevance, we turn to Orr's acclaimed study of technicians where, as part of an ethnography of their work, their learning as a situated practice is valuably illustrated. In developing a critique of the popularization of Lave and Wenger's thinking, it is not our primary intention here to demonstrate in any detail how a more developed and less ambivalent analysis of learning, as legitimate peripheral participation, is "complicated in social structures involving relations of power" (Lave and Wenger 1991, p. 36). Nor are we directly concerned with the important question of the practical consequences of applying notions of situated learning that dilute or exclude its radical claims. Our analysis is, nonetheless, intended to invite reflection upon the affinity between the dilution and selective adoption of Lave and Wenger's thinking and its ideological compatibility with dominant managerial values. We seek to show how the popularizing of Lave and Wenger's thinking has selectively appropriated their ideas; how this selectivity is partially applicable in terms of Lave and Wenger's (1991) underdeveloped conception of the power-invested situatedness of learning; and, finally, to suggest and illustrate what would be brought into the picture by developing a more sustained attentiveness to the broader social structure of work relations through which learning practices are articulated.

## An Outline of Situated Learning Theory

The established body of knowledge on learning, including the organizational learning literature, conceptualizes learning as a cognitive process involving a selective transmission of comparatively abstract, codified bodies of knowledge within and from one context—such as the classroom, training, and mentoring—to the sites of their application (e.g., specific work practices).[2] Earlier contributions have questioned the adequacy and relevance of cognitive theories of learning (Marswick and Watkins 1990, and Garrick 1998 offer overviews of some relevant literature), but Lave and Wenger's *Situated Learning,* has, nonetheless, been pivotal in drawing together threads of earlier ideas into a more sustained conceptualization of "situated learning" within "communities of practice." Some key differences between established and situated conceptualizations of learning are summarized in Table 1 (see Appendix).

For Lave and Wenger (1991), learning is located or "situated" within everyday (e.g., work) practices. However, learning is not situated in practice "as if it were some independently reifiable process that just happened to be located somewhere" (Lave and Wenger 1991, p. 35). Instead, learning is conceived as "an integral part of generative social practice in the lived-in world" (Lave and Wenger 1991). From this it follows that an adequate understanding of learning must fully acknowledge both its embodied ("lived-in") and its historically and culturally embedded ("generative" qualities). For example, learning occurs in the practice of storytelling through which context-sensitive understandings of the world of work and of working selves, as well as tasks performed, are acquired, shared, and elaborated. As Orr (1990) observes, in his study of photocopier technicians,

> Information from whatever source is shared freely among the technicians, and this communal understanding or community memory is sufficiently important that one may think of the technicians as a community of knowledge... war stories, anecdotes of experience, serve as a vehicle of community memory for the technicians.... The war stories are *situated* in that they combine facts about the machine with the context of specific situations. (Orr 1990, pp. 174–175, emphasis added)



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The promise of situated learning theory is to focus attention directly upon learning as a pervasive, embodied activity involving the acquisition, maintenance, and transformation of knowledge through processes of social interaction. In common with researchers who study organizations as cultures, analyses of situated learning "focus less on cognition and what goes on in individual heads, and more on what goes on in the *practices* of groups" (Weick and Westley 1999, p. 442, emphasis added). Learning is conceived to occur as individuals become members of the "communities" in which they are acculturated as they participate actively in the diffusion, reproduction, and transformation of knowledge-in-practice about agents, activities, and artifacts. "To know," it is argued, "is to be capable of participating with the requisite competence in the complex web of relationships among people and activities" (Gherardi et al. 1998, p. 274; see also Boland and Tenkasi 1995, Fox 2000).[3] Within "communities of practice," it is not the acquisition of skill or knowledge with a universal currency (e.g., textbook knowledge) that identifies the "competent" member. Rather, it is a demonstrated ability to "read" the local context and act in ways that are recognized and valued by other members of the immediate community of practice, that is all-important. In this respect, and this is a central point in Lave and Wenger's monograph, learning is not adequately understood as the transmission/acquisition of information or skill but inter alia "involves the construction of identities" (Lave and Wenger 1991, p. 53).

The importance of identity construction and its theoretical significance is clarified in the second chapter of *Situated Learning*, titled "Practice, Person, Social World." There, Lave and Wenger (1991) outline a view of learning as integral to social practice that, first and foremost, involves participation, as signaled in the subtitle of their book: *Legitimate Peripheral Participation*. For Lave and Wenger, participation *in social practices* is a sociocultural phenomenon. By "sociocultural" they do not mean the immediate context or background of interaction amongst individuals, but a complex participation in wider social relations: "it is important to consider how shared cultural systems of meaning and political—economic structuring are interrelated of learning practice, in general and as they help to co-constitute learning in communities of practice" (Lave and Wenger 1991, p. 54). This understanding of learning as practice underpins their interest in power relations. Mention of "political economic structuring" and numerous other references to power and power relations (which we cite in this paper) are not casual asides. Rather, they extend an invitation to appreciate how communities and practices develop and are (also) reproduced within a wider nexus of politicoeconomic relationships and institutions.

For Lave and Wenger, understanding learning in practice necessitates *situating* the "person-in-the world" and making sense of *how* persons become a member of what they call "*socio-cultural* communities" (Lave and Wenger 1991, p. 52). This conception of "situatedness" is rather different from that commended by authors such as Greeno (1997, 1998), for example,[4] who have developed a pragmatist and interactionist formulation. In Lave and Wenger, "situatedness" is closely associated, and not by chance, to the radical and critical traditions of Marx, Giddens, or Bourdieu (see Lave and Wenger, 1991, pp. 38, 50, 51, 54). An unequivocal confirmation of this influence and debt occurs when Lave and Wenger make reference to the work of Marxian-inspired activity theorists (e.g., Engeström 1987), agreeing that their understanding that "the major contradiction underlying the historical development of learning is that of the commodity" is "fundamental to the historical shaping of social reproduction as well as production" (Lave and Wenger 1991, p. 114). Having clarified this point, we conclude that Lave and Wenger's interest in power relations is not marginal or accidental. In the following section, we recall the centrality and significance of power relations within Lave and Wenger's conceptualization of learning processes.

## Learning and Power

The situated learning perspective aspires to incorporate considerations of power in respect to "the social organization of and control over resources" (Lave and Wenger 1991, p. 37), including the resources that are a medium and outcome of participating in "communities of practice." Lave and Wenger understand the operation of power to foster or impede access to, and continuing membership of, communities of practice—distilled in the phrase, "*legitimate peripheral participation.*" This notion highlights the power-invested process of bestowing a degree of legitimacy upon novices as a normal condition of participation in learning processes. It is clearly difficult, if not impossible, to learn a practice, and thereby to become an (identified) member of a community of practice, when power relations impede or deny access to its more accomplished exponents; and, conversely, power relations can enable access to these learning practices. As Lave and Wenger write:

> *Hegemony over resources* for learning and alienation from full participation are inherent in *the shaping of the legitimacy* and peripherality of participation in its historical realizations (1991, p. 42, emphases added).



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It is worth paying detailed attention to this passage. First, it is relevant to notice the language—hegemony, alienation, historical realization—in which Lave and Wenger's argument is cast. This is not the vocabulary of managerialism and liberal consensus, nor of interactionism and pragmatism. Rather, it is redolent of radical Marxist understandings of how seemingly communal, shared norms and values are established and maintained hegemonically within relations of power that operate to include/exclude, support/suppress, centralize/marginalize, and promote/devalue rival forms of knowledge-in-practice (see also Lave and Wenger 1991, p. 38).

Lave and Wenger invite a closer and more systematic examination of how power relations mediate the acquisition, maintenance, and transformation of meanings, including what is deemed "legitimate." Power relations are conceived to enable and constrain access to positions of (initial) peripherality and potential mastery: "These relations *generate* characteristically interstitial communities of practice and *truncate* possibilities for identities of mastery" (Lave and Wenger 1991, p. 42, emphases added). We may think, for example, of how processes of identity formation, with regard to class and gender as well as ethnicity, routinely operate to render large segments of the population of modern, advanced societies and corporations unable or disinclined to participate in certain occupational communities, and thereby "truncate possibilities" for mastering their practices while, for others, privileged access to these practices is enabled. This, it may be inferred, is what Lave and Wenger (1991) have in mind when they contend that learning embodies "the structural characteristics of communities of practice" (Lave and Wenger 1991, p. 55)—in the sense that social divisions including those of class and gender are already structured into "communities" in ways that organize social space and impede or facilitate access to certain resources, forms of activity, technologies, and so forth. That said, and as we argue later, when it comes to illustrating their thinking by reference to the practices of midwives, tailors, quartermasters, butchers, and nondrinking alcoholics, connections between the practices of "community" members and the "structural characteristics" of these communities are left largely unexplored. Almost as an afterthought, Lave and Wenger (1991, p. 86) make brief reference to Becker's (1972) study in which, they note, "he raises more acutely than the ethnographic studies discussed here the conflictual character of access for newcomers, the problem about power and control on which these studies are on the whole silent."

In light of the above, it is difficult to find support for any suggestion that an attentiveness to the embeddedness of learning in power relations was excluded from, or even postponed, in *Situated Learning*. Lave and Wenger's acknowledgement that "there are central issues that are only touched upon," such as the concepts of "communities of practice" and "unequal power relations," does not mean that they are sidelined. Indeed, Lave and Wegner make a point of arguing that *both* must form a (more) central part of situated learning theory and, in particular, write that "...*unequal relations of power must* be included more systematically in our analysis" (Lave and Wenger 1991, p. 42). Here, they express a clear call for the development of those issues. Unfortunately, as we show later, this call has been largely unheeded by those eager to appropriate Lave and Wenger's thinking for other purposes.

"Power" as well as "community of practice" are central to Lave and Wenger's project and, more specifically, to what they identify as the "defining characteristic" of learning as a process: "legitimate peripheral participation" (Lave and Wenger 1991, p. 29). Lave and Wenger conceptualize "legitimate peripherality" as "a complex notion implicated in social structures *involving relations of power*" (Lave and Wenger 1991, p. 36, emphasis added). Legitimate peripherality, they continue, "can be a source of power or powerlessness, in affording or preventing articulation and interchange among communities of practice" (Lave and Wenger 1991, p. 36). There is, of course, scope for debating how adequately Lave and Wenger conceptualize power, and how adequately they incorporate their understanding of power into the analysis of learning as a situated practice. We give some attention to this issue in the following section and in Contu and Willmott (2002), but there seems little basis for doubting that (a) legitimate peripheral participation is central to Lave and Wenger's alternative understanding of the concept of learning (see, for example, Lave and Wenger 1991, pp. 29, 34–36, 121) and (b) that "power" is pivotal for their analysis (see for example, Lave and Wenger 1991, pp. 36, 64, 98). Indeed power is incorporated directly into Lave and Wenger's very definition of "community of practice"—an idea that, by admission of the two authors, "is left largely as an intuitive notion" (Lave and Wenger 1991, p. 42) but which has been so widely popularized:

> A community of practice is an intrinsic condition for the existence of knowledge, not least because it provides the interpretive support necessary for making sense of its heritage. Thus, participation in the cultural practice in which any knowledge exists is an epistemological principal of learning. The social structure of this practice, its *power relations* and its conditions



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for legitimacy define possibilities for learning (i.e., for legitimate peripheral participation) (Lave and Wenger 1991, p. 98, emphasis added).

So far we have concentrated on showing how power is by no means a marginal element in Lave and Wenger's conception of *Situated Learning*. In the following section, we argue that their conceptualization of power relations in learning is nonetheless limited by an undeveloped appreciation of how social practices are embedded in history and language. In advancing this critique, we echo Lave and Wenger's own aspiration to advance situated learning theory in a direction that pays closer and more systematic attention to the significance of power relations in the (re)formation of communities of practice.

## Power, History, Language: A Critique of *Situated Learning*

An analysis of learning that incorporates an appreciation of the "hegemony over resources for learning" within "unequal relations of power" (Lave and Wenger 1991, p. 42) requires an understanding of how practices are embedded in history and language. Actions that comprise learning are thus conceived to be embedded in their historical conditions of possibility, and language is understood to be the principal medium of communication for the (re)production of social practices.

The "analytic viewpoint," presented in *Situated Learning* makes some space for history. In "a theory of practice," Lave and Wenger (1991, p. 51) write, "cognition and communication, in and with the social world, are situated in the historical development of ongoing activity." "Historizing" is important because it stresses their notion of "situatedness" in a way that departs from a more established notion of learning based on internalization (Lave and Wenger 1991, p. 51), where learning is conceived as universal rather than as specific to particular historical conditions. There is, however, very limited exploration of the historical formation of "learning," either in the construction of Lave and Wenger's analytic viewpoint or, especially, in their consideration of a series of ethnographic studies where any debt to concepts of history—and, with it, ideology, contradiction, power and conflict—is more conspicuous by its absence. Lave and Wenger's aspiration to provide a radical, challenging analytic viewpoint tends to fade away as they move from the presentation of their theory to an analysis of how processes of legitimate peripheral participation are played out through situated learning practices.

A parallel deficiency is exposed with regard to language. When commending an analytic perspective on learning, Lave and Wenger (1991) emphasize the value of an approach "that turns the apparently 'natural' categories and forms of social life into challenges to our understanding of how they are (historically and culturally) produced and reproduced" (Lave and Wenger 1991, p. 38). We have noted how their conception of "learning" as "situated" serves to problematize the "naturalness" of cognitive, reified representations of learning by recalling their practical—embodied and embedded—qualities. In Lave and Wenger's appeal to the idea of "community," however, there is an absence of reflection upon its "naturalness" and associated ideological appeal. In *Situated Learning* and its subsequent refinement (Wenger 1998), the concept of community is ostensibly positioned on a conflictual terrain (Wenger 1998, Ch. 2). However, the condition of existence of such communities is located in harmonizing categories such as "a sense of *joint* enterprise... relationship of *mutuality*... *shared* repertoire of *communal* resources" (Wenger 1998, emphasis added). Community is conceptualized in a way that tends to assume, or imply, coherence and consensus in its practices. Such usage, we suggest, glosses over a fractured, dynamic process of formation and reproduction in which there are often schisms and precarious alignments that are held together and papered over by unreflexive invocations of hegemonic notions including "community," "family," "team," and "partnership." By default, Lave and Wenger's usage of "community" is complicit in the reproduction and legitimation of this hegemonic process.

We point here to the danger of assuming a consensus in communities of practice, urging those interested in developing situated learning theory to emphasize the idea of *practice* rather than "community" (see Gherardi 1998, 2000; Brown and Duguid 2001). We are in agreement here with Gherardi et al. (1998), who usefully invoke Bourdieu's concept of "habitus" to convey an understanding of how members of "communities" are differentiated and identified by how their perceptions, thoughts, and actions are developed and colored in distinctive ways. Different sets of practices, located in different space-time contexts, are recognized to generate different and competing conceptions of the degree of consensus, diversity, or conflict amongst those who identify themselves, or are identified by others, as "communities." Those who focus upon *communities* of practice (e.g., Wenger 1998), in contrast, are inclined to locate "practices" or "behavior" primarily in the context of a unitary—and managerially more appealing—conception of "community" or, indeed, "organization." This emphasis tends to inhibit consideration of the social location of "community" and "organization" members within a wider set of institutional relationships.



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Competing invocations of "community" illustrate how language may be deployed, more or less consciously or "politically," in ways that devalue or suppress social differences—including those of gender, ethnicity, and aspiration. In this respect, Lave and Wenger (1991) fail to align their use of the concept of contradiction to their emphasis on power relations and the historical embeddedness of learning in (social) practice. They deploy the concept of contradiction to highlight tensions between (i) learners' accomplishment of continuities of practice within communities and (ii) learners' disruptive instigation of innovations that threaten to displace the centrality of "old-timers" in the reproduction of "community" (Lave and Wenger 1991, pp. 113–117). Consideration of how learning processes in work organizations are embedded within relations of subordination and potential antagonism between, for example, the buyers and sellers of labor is, for the most part, excluded. Later we illustrate this point by reference to the copier technicians studied by Orr (1990, 1996). Orr's findings, we suggest, can be interpreted as appreciation of how the technicians construct a sense of meaning and identity within a space that is bounded and shaped by pressures to intensify their work, to reduce the porosity of their labor, and to improve customer service as a means of securing market share and profitability. Before elaborating this power-sensitive view of learning as situated practice, we first show how popularizers of *Situated Learning* have favored a conservative reading and appropriation of Lave and Wenger's ideas.

## Popularizing Situated Learning Theory

Brown and Duguid's (1991) "Organizational Learning and Communities-of-Practice: Towards a Unified *View* of Working, Learning and Innovation" is by far the most frequently cited article on situated learning in the management and organizations literature. Brown and Duguid selectively appropriate from situated learning theory the insight that learning is an integral feature of the practical "intricacies" of work. Criticizing approaches that rely upon formal, abstracted characterizations of work and learning they note how

> Formal descriptions of work (e.g., "office procedures") and of learning (e.g., "subject matter") are abstracted from actual practice.... Abstractions *detached from practice* distort or obscure intricacies of that practice (Brown and Duguid 1991, p. 40).

Brown and Duguid (1991) represent learning as an expression of communities of practice that are conceived to have *shared values*. They refer to the shared norms that get formed, transformed, and transmitted within these communities and through the communicative actions of their members. This "take" on situated learning disarticulates the relationship between relations of power, within and without "communities," and the formation and transformation of norms.

According to Brown and Duguid (1991), Lave and Wenger's (1991) conceptualization of situated learning theory enables us to identify "paths" where learning is realized. Individuals have the "chance" of becoming part of a community of practice by observing "old-timers" and experts doing their job, and by interacting physically and verbally with them. Learning is conceived to be synonymous with the process of being socialized or enculturated into a community of practice. "Learners," they write, "...learn to function in a community...acquiring that particular community's subjective viewpoint and learn to speak its language" (Brown and Duguid 1991, p. 48). Note here the assumption of consensus and the abstraction of the "community" of learners from the wider field of social relations.

Brown and Duguid usefully correct the tendency to abstract descriptions of work from its "actual practice." Yet, they do so by abstracting its enactment within communities from the relations of power through which work practices are shaped, reproduced, and identified as "communal." A passing reference is made to how corporations "have superior bargaining power in negotiating the terms of the exchange (of knowledge) [so that] internal communities cannot reasonably be expected to surrender their knowledge freely" (Brown and Duguid 1991, p. 55). However, there is no integration of this understanding within Brown and Duguid's formulation of situated learning. Note in particular the absence of any mention of contradiction—either of "the commodity" in respect of labor's status within capitalist relations of production or even of the contradiction between continuity and displacement in the social reproduction of labor which, as noted earlier, are both present in Lave and Wenger (1991, see specifically pp. 113–117).

To give a further example of the selective appropriation of *Situated Learning*, consider Brown and Duguid's commentary on the failure of some trainees to become full members of communities of practice. To account for this failure, they refer exclusively to accidental elements such as the poor design of training programs and the incompetence or lack of expertise of trainers (Brown and Duguid 1991, p. 50). "Failure" is thus attributed to factors or variables in the immediate situation. Brown and Duguid are silent on issues of control and resistance in processes of learning—whether it is amongst and between the neophytes and masters, or it is in relation to others—such as their managers or their customers—who



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are involved in defining the boundaries and determining the terms and conditions of their work.

When reflecting upon the status of their thinking, Lave and Wenger (1991) are insistent that their "viewpoint" is "analytical," not normative or prescriptive (see, for example, p. 41). Brown and Duguid (1991), in contrast, consider how "legitimation" and "peripherality" could be operationalized, promoted, and applied in order to secure more effective learning processes. By acquiring a fine-grained knowledge of the intricacies of work,[5] including its noncanonical practices, Brown and Duguid (1991, p. 40) anticipate how programs of training and innovation can be developed that are more congruent with existing practice, thereby enabling continuous learning to be engendered and work performance to be enhanced. On the heels of these seductive arguments is the burgeoning of conferences, workshops, and training activities where the concept of community of practice is fashioned into to a tool for facilitating knowledge management. Different agents—consultants and practitioners as well as academics—are now engaged in promoting and legitimizing this process of commodification and legitimation.[6] In this process, the *analytical concept* of legitimate peripheral participation is recast as a *technocratic tool* of organizational engineering. Radical elements in Lave and Wenger's thinking are unnoticed, suppressed, or conveniently overlooked as the practices of situated learning are positioned and interpreted within a functionalist or systemic ontology of organization that pervades the literature on organizational learning. We now consider how these radical elements may be retrieved, fostered, and applied. The vehicle we adopt for demonstrating this possibility is Orr's study of photocopier technicians.

## Situating "Situated Learning" in Relations of Power

We take up Orr's study of copier technicians because it is a widely cited exemplar of learning and knowing in communities of practice (see, for example, Brown and Duguid 1991, Raelin 1997, Gherardi 1999, Yanow 2000). We are aware that Orr's debt is principally to the work of Suchman rather than Lave and Wenger (see Orr 1996, pp. 10–11). We also recognize that *Talking About Machines* is an ethnography of work, not a study of learning processes. Nonetheless, *Talking About Machines* is very much about the way copier technicians collectively *learn* the practice of machine maintenance and repair through interacting within their community of practice, and it is for this reason that Orr's work is so widely referenced to illustrate the ideas of situated learning theory. Orr's ethnography illuminates how communities of practice (are at) "work." That the respective approaches of Suchman and Lave and Wenger have strong affinities and overlaps with Orr's perspective on work is evident in Orr's positive citing of Suchman's approach:

> The basic premise is twofold: first, that what traditional behavioral sciences take to be cognitive phenomena have an essential relationship to a publicly available, collaboratively organized world of artifacts and actions, and secondly, that the significance of artifacts and actions, and the methods by which their significance is conveyed, have an essential relationship to their particular, concrete circumstances (Suchman 1987, p. 50 cited in Orr 1996, pp. 10–11).

Having signaled parallels between Suchman's position,[7] commended by Orr, and the standpoint advanced by Lave and Wenger, we wish to underscore how *others* have repeatedly identified Orr's work as illustrative of the kind of "situated learning" that lies at the heart of Lave and Wenger's concerns. It should also be remembered that Lave and Wenger themselves have, *in primis*, utilized his work to illustrate their theory.[8]

We turn to Orr's study not only because it will be familiar to many people with an interest in learning in organizations and "organizational learning," but also because its richness as an ethnography suggests ways in which his account of the technician's work can be read to illuminate the more radical elements in Lave and Wenger's thinking. We acknowledge that this involves interpreting Orr's empirical material in ways that depart from his own reading/analysis of it. Orr's analysis, we will claim, tends to marginalize, yet does not completely exclude, consideration of "macro" relations and, notably, the employment relationship. There is sufficient material in Orr's book-length treatment of the copier technician's work, nonetheless, to indicate how his accounts of their activities can be (re)interpreted in a way that is illustrative of the more radical elements of Lave and Wenger's thinking. To the extent that we seek to remedy what we identify as absences in Orr's analysis, our criticisms should be read, in this context, less as a critique of Orr's study than as a challenge to commentators on his work who, as indicated earlier, have uncritically invoked his study to support a conservative reading of *Situated Learning*, and to advance a conservative, managerialist conception of organizational learning.[9]

Orr (1990) notes how the copier technicians experienced strong pressures from their employer, and also from customers, to remedy copier machine breakdowns without making expensive and disruptive machine exchanges. This "strong social pressure" is not, however,



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explored or problematized in terms of technicians' more-or-less compliant or resentful adherence to company values, including an ethos of customer service. In relation, there is also no consideration of the manipulative quality of corporate appeals to the technicians' pride in troubleshooting machines, to which Orr makes repeated reference, as a stratagem for minimizing costly and customer-antagonizing machine replacements. In Orr's (1990) account, oppositional or countercultural values—values that are so frequently explored in ethnographies of occupational groups—are largely unexamined, and are overshadowed by the contention that "a technician's primary goal is to keep the customer happy, which includes, but is not limited to, fixing the machine as necessary" (Orr 1990, p. 172; see also Orr 1996, p. 108). While we accept that it is highly probable that "on the whole, the technicians got their best psychological rewards from the customers" (Orr, personal communication), we question the translation of this understanding into the claim that "a technician's *primary goal* is to keep the customer happy."

Orr's account of the technician's "primary goal" is uncritically reproduced by Brown and Duguid (1991). As they put it, "the resulting loss of face for the company, loss of the customer's faith in the reps, loss of their own credit within their organization, and loss of money to the corporation made this (abandoning repair and replacing the machine) their last resort" (1991, p. 43). We recognize that the logic of repairing rather than replacing machines was a compelling one for the technicians. However, without further exploration of how this logic was constructed as compelling—through the hegemonic, consensual alignment of the views of the company and the technicians—this interpretation simply articulates and endorses a commonsense, structural-functionalist view of work organizations and the position and practices of employees, such as the technicians, within them. This is an example of how in popular accounts of situated learning the "situatedness" of specific people, the technicians, in specific circumstances is idealized by excluding issues of history, language, and power. In fact, little consideration is given to the wider conditions—historical, cultural, and social—that make possible the existence of what Orr so richly reports—that is, the technicians' reluctance to exchange machines, their delight in troubleshooting, and their receipt of psychological rewards from customers. Such considerations point to other aspects or "goals" of the technician's work practices such as, for example, receiving an adequate level of compensation, remaining in employment, retaining control of some aspects of their work, and/or preserving spaces of autonomy—none of which is inherently compatible with doing everything to keep the customer satisfied, and thereby receive "psychological rewards," but cannot convincingly be subsumed within this objective.

Orr's (1996) book-length treatment of his study casts some doubt on the credibility of his earlier, functionalist analysis of the technicians' learning practices. In *Talking About Machines* more is disclosed about management's strategies to control and direct the recalcitrant tendency of technicians to do it their way and to improvise when faced with a malfunctioning machine. Orr notes how, for example, procedures contained in manuals formed an integral part of a broader managerial strategy that was intended to "prescribe the technicians behavior from arrival at the customer site until departure," and thereby "lead to the resolution of problems more quickly" (Orr 1996, p. 106). But this instruction is not connected to the requirement from shareholders (as well as managers) that management secure and retain control of the employment relation and the technicians' work activity. Orr's close and revealing illumination of the technicians' working practices shows how inventive they were in performing their work within the space proscribed by management. The technicians exercised little formal influence over the design of their work, however, even though there is no reason to believe that they were uninterested in how their work was allocated and channeled. On the contrary, the technicians were frustrated by their lack of control over how their work was organized, monitored, and evaluated. The technicians' limited scope for exercising control over the design of their work is better explained in terms of managers' determination to retain control. Allowing technicians to influence the design of their work risked allowing the possibility that their priorities—for secure, interesting, well-paid work—could take precedence over the provision of a satisfactory rate of return to capital as well as a continuing role for managers. The exclusion of the technicians from decision making about how their work is designed, controlled, and rewarded is persuasively presented by Orr as practically unsustainable, given the nature of their work, but this exclusion is also treated as politically unproblematical.

In Orr's study, no link is made between the daily discourse of the technicians and the capitalist relations of employment in which the technicians struggled to prosecute their work.[10] Provision of the manuals to control their practices was intended to substitute standardized, managerially sanctioned, and predictable procedures for the technicians' local knowledge and embodied improvisational skills. By providing a set



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of directive procedures, the company aspired to short-circuit the deployment of skill and discretion, and thereby raise their productivity by eliminating the undisciplined and potentially damaging exercise of initiative.[11] In principle, company documentation incorporates "facts, problems, symptoms, and solutions, drawn from field experience (Orr 1996, p. 52). "The corporation perspective;" Orr (1996, pp. 52–53) notes,

> seems to feel that what is learned in the field needs to be processed elsewhere in the organization before possibly, if approved, being returned to the field. New discoveries are to be reported through the appropriate channels; the technicians report that information so dispatched is rarely seen again. This requirement of reporting seems to be part of a widespread intuition that learning must be harvested, that left in place it will decay....

The introduction of directive procedures meant that the technicians could not be held responsible for any failure to fix a machine, so long as it could be demonstrated that the procedures set out in the documentation had been followed. As Orr (1996, p. 111) observes, there was a tension between the technicians' perception that they must project an image of competent practice and the corporation's requirement that technicians use the documentation. Orr continues:

> The former [competent practice] dictates that they systematically try all possible approaches to a recalcitrant problem, and the latter [required use of documented procedures] grants a form of immunity to blame should the problem prove intractable. That is, *in providing directive documentation, the corporation is assuming responsibility for solving the machine's problems and in the eyes of the corporation, technicians are only responsible for failing to fix a machine if they have not used the documentation* (emphasis added).

This example of the (possibly) self-defeating consequences of the imposition of management control—so that when procedures are slavishly followed opportunities for learning and developing the capacity to fix machines are denied—suggests the relevance of incorporating concepts of *contradiction*, *ideology* (managerial as well as other employees'), and *conflict* into analyses of situated learning. More specifically, this example illustrates Lave and Wenger's (1991, p. 42) contention that participation in work practices is shaped by hegemony over resources for learning and alienation. In this case, there is an attempt by management to restrict legitimate knowledge of (how to fix) the machine to the (hegemonically defined) scope of the manual.

Orr shows how management sought to tighten control over the technicians' labor by standardizing their work. However, because the technicians conceived of themselves as artful, heroic troubleshooters rather than docile, compliant robots, they came into conflict with managers eager to proceduralize their work. For example, as we have noted, the technicians place a high value on storytelling which, Orr (1991, p. 13) observes, served to "demonstrate," "celebrate," and "create" the technicians' identities as masters of the service situation. "The corporation," in contrast, "deplored" storytelling (Orr 1991). An unintended, contradictory consequence of managerial moves to tighten control, and thereby devalue the technicians' trouble-shooting capabilities, was the provoking of "resentment" (Orr 1996, p. 110) which jeopardized their willingness to develop and deploy their knowledge of how to remedy machine breakdowns.

How, then, was the conflict contained so that, in practice, customers continued to be serviced? Orr highlights the importance of aspects of the technicians' identity—in the guise of the positive value placed by technicians upon heroic troubleshooting—in mitigating the tensions that had been provoked by management's impugning of their skillful practices. The technicians' heroic troubleshooting was, however, ambivalent with respect to their relationship to management and the organization of their work. It was a sense of occupational pride—nurtured by participation in practices where heroic troubleshooting was especially valued—that attenuated the contradictory effects of moves intended to restrain technicians' exercise of discretion:

> while the technicians are quite willing to let the corporation assume any blame [for failures to solve machine problems], their own image of themselves requires that they solve the problems if at all possible (Orr 1996, p. 111).

When selling labor, participation in labor markets is compelled *inter alia* by the possibility of dismissal or demotion.[12] Reflection on the willingness of technicians to learn about the machines suggests that their practices were inspired as much, and arguably more, by an impulse to demonstrate and reproduce their identity as heroic troubleshooters as by any a priori devotion to corporate values, such as "keeping customers happy." Far from unequivocally embracing the view that "to keep the customer happy" (Orr 1990, p. 172) was their "primary goal," we conjecture that this "goal" was fulfilled as a consequence of the technicians' determination to demonstrate their prowess as skillful, improvizing troubleshooters and, of course, to reap the psychological reward from their customers when they succeeded in fixing a failed machine. It was as *heroic troubleshooters* that they were willing to do whatever they could to rectify machine problems. It was through the construction of this heroic sense of identity—as enactors of skillful work—that the technicians were willing to learn how to



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fix machines that defied repair using prescribed procedures alone, or to fix them more quickly than permitted by rigid compliance with corporate documentation.

The technicians' work culture fostered a willingness to develop innovative methods of fixing machine problems. While they clearly enjoyed the psychological rewards given by customers when machines were fixed, we have questioned whether their primary concern was "to keep the customer happy." As *individual service agents* working at customer sites, the technicians were undoubtedly gratified by praise from satisfied customers. But as members of a community of practice, their principal concern was to resist moves and pressures to further commodify their labor by organizing their work in ways that enabled them to communicate and share their "competent practice" (Orr 1990, p. 111) by using methodologies and procedures imposed upon them by management. *QUA* technicians, these workers developed and embraced a technically oriented narrative of heroic troubleshooters rather than a client-centered narrative of customer satisfaction. As the title of Orr's book bears witness, their talk was principally about machines, not satisfied customers. From their investment in this talk, the technicians derived a sense of identity and self-esteem[13] sufficient to counter and discredit demands that they dutifully follow the company's diagnostic procedures. Perversely, perhaps, this investment operated to fulfil, rather than impede, the objective of keeping customers happy by repairing machines effectively. In a contradictory manner, the technicians' struggles simultaneously counteracted and challenged, but also facilitated, the (managerial) treatment of technicians as sellers of (commodified) labor from which a profitable surplus could be extracted (see Knights and Willmott 1989, Ezzamel and Willmott 1998).

## Summary and Conclusions

We began by noting how *Situated Learning Theory* (Lave and Wenger 1991) questions the adequacy of "old," disembodied, and atomized thinking where little or no attention is paid to how, within the workplace, agents, activities, and their world mutually constitute each other within "communities of practice." In the mainstream of the literature on organizational learning, there is a focus on formal channels and strategies for transmitting and pooling knowledge, often within specialized contexts such as the classroom, training sessions, or mentoring. "Situated learning," in contrast, understands processes of knowledge formation and sharing as integral to everyday work *practices*. By conceptualizing these practices as coincident with processes of identity formation that are articulated through relations of power, situated learning theory offers an alternative to, and invites a fundamental questioning of, mainstream learning theories.

The radical dimension of *Situated Learning* is evident in Lave and Wenger's self-proclaimed "critical stance," where an emphasis is placed on the importance of power relations, as well as identity formation, for understanding learning as a situated practice. This stance is compromised, we have argued, as Lave and Wenger move from the exposition of a (radical) theory of situated learning in which concepts of power, ideology, and contradiction are embraced, to its application where some rather conventional interpretations of empirical studies are deployed to illustrate their theory. When it comes to illustrating practices of situated learning, Lave and Wenger are inclined to overlook the significance of the wider institutional contexts and media of learning practices in favor of a focus on relations between "community" members and their significance for processes of identity (re)formation (see, for example, Lave and Wenger 1991, p. 115). A conservative formulation of situated learning then emerges in which "communities of practice" become the self-referential founts of all relevant knowledge and learning.[14] A slippage occurs from "a theory of practice" that commends consideration of "relations of power" and "alienation from full participation" to illustrations of situated learning that marginalize such considerations. *Situated Learning* occupies an ambivalent position. On the one hand, it espouses radical analysis of learning practices, where concepts of contradiction, ideology, conflict, and power are central. Yet, on the other hand, Lave and Wenger select functionalist or interactionist illustrations of their thinking, in which consensus and continuity are assumed (cf. Burrell and Morgan 1979). This tension, it is worth stressing, cannot be resolved simply by making the obvious point that social practices invariably comprise elements of "conflict" and "consensus." The issue at stake is: *how is "consensus" interpreted?* Is it an expression of unforced agreement, or is it a hegemonically stabilized outcome of a power play of social forces? Whereas the conceptual chapters of *Situated Learning* contemplate the possibility of the latter, popularizers of their work and the cases chosen by Lave and Wenger to illustrate their thinking incline towards the former.

This inconsistency in *Situated Learning* has made it easier for proponents of mainstream organizational learning to regard situated learning theory as, at best, a somewhat innovative approach that may be utilized to extend or enrich, but not fundamentally challenge, its theoretical and normative orientations. Notably, Brown



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and Duguid's (1991) account of organizations as collections of communities of practice involves a cleansing of historical and societal coordinates from the examination of (situated) learning as a process of social interaction, meaning, and identity reproduction. The organizational context of learning is conceptualized in terms of a transparent background rather than a contested history. Minimal consideration is given to how actions are conditioned by social forces that are not readily amenable to managerial intervention and remedy.

What attracts the popularizers of situated learning theory, we have suggested, is the anticipation that closer knowledge of employees' everyday learning will enable managers to redesign their work in ways that, for example, will increase employees' capability of addressing technological and market changes. This interpretation affirms the understanding that much current interest in organizational learning stems from an expectation that it will provide a means of securing employee participation and compliance in "new" corporate disciplines such as teamworking and project-based activities. By packaging new control mechanisms in the language of learning, employees are offered opportunities to acquire new skills and/or develop a capacity to work more effectively together (see Coopey 1995, Contu and Willmott 2002). "Learning" has appealing connotations resonant with motherhood and apple pie that make it difficult to question or refuse (see Grey 1998). A managerialist agenda—which ignores conflicting values and preferences, represents them as pathological, or aspires to resolve them through skillful managerial intervention—is not effortlessly reconciled with the radical dimensions of situated learning theory. An accommodation is contrived by thematizing the "situation" or context of learning in a way that conceives of the work group, or "community of practice," as unified and consensual, with minimal attention being paid to how learning practices are conditioned by history, power, and language.

To demonstrate how work practices might be reinterpreted in a way that more fully appreciates and incorporates the radical thrust of Lave and Wenger's analytic framework, we revisited Orr's widely cited study of copier technicians. Their practices were interpreted as articulations of relations of power institutionalized in labor markets and corporate hierarchies where labor is commodified and controlled. It is the hierarchical relationship between management and the technicians that renders the latter's local knowledge opaque, and even dangerous, to managers. The social distance combined with a dependence upon workers' exercise of discretion to accomplish their tasks means that their key practices escape or defy direct managerial surveillance and regulation. By striving to proceduralize their work as a substitute for the technicians' exercise of local knowledge embedded in their situated learning practices, management endeavored to codify workers' knowledge. Yet, as Orr stresses, the technicians' willingness to exercise discretion, and thereby demonstrate their powers as skilful troubleshooters, was critical to providing effective servicing of the machines.

The technicians' dedication to troubleshooting served to increase the value-added contributed by their labor without incurring proportionate costs associated with incentives relating to improvements in their wages and conditions. There is, however, scant evidence in Orr's work to support the idea that management recognized this source of value. Indeed, the evidence he presents suggests that management were inclined to regard technicians' scope for exercising discretion as a threat to their control (which they sought to contain through the imposition of procedures), rather than as a positive benefit in terms of customer service as well as employee retention and satisfaction. As Orr (1998, p. 453) notes, in some later reflections upon managers' seemingly irrational treatment of the technicians: "connecting models of work with discourses of power, money and control of work suggest that managers would not want to acknowledge the skill and autonomy of their (sic) technicians, as this would make them seem more valuable in their discourses." The managers and supervisors of the technicians sought to introduce or refine corporate media of domination, in the form of tighter procedures, performance measures, and monitoring. This move met with resistance fueled by an identity—attachment to heroic troubleshooting as the technicians struggled to retain the space in which they could demonstrate and celebrate their skillful practices. A contradictory effect of management's efforts to introduce prescribed procedures was to strengthen and defend the technicians' sense of identity as heroes, which also had the unintended beneficial consequence, from a managerial standpoint, of enrolling technicians' commitment to fixing the machines, and thereby minimizing machine downtime with positive outcomes for customer service and profitability.

The contradictory organization of the employment relationship, we have suggested, is of direct relevance for understanding why, for example, there is frequently overt or covert resistance to management's priority of sharing knowledge within and between workplace "communities of practice." Developing this line of thinking—which is consistent with Lave and Wenger's (1991, p. 42) espoused concern with the significance of "relations of power" and "alienation from



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full participation"—leads us to understand "information sharing" within "communities" as historically contingent. In some contexts, this sharing may appear "natural" or "spontaneous," but this openness is conditional upon a sense of trust in the other, rather than suspicion, hostility, or reservation about the use to which such information may be put.[15] Hoarding/sharing information is dependent *inter alia* upon the hierarchical positioning of practices within product and labor market conditions that make jobs comparatively in/secure, and that render employees more or less inclined to develop relations through which knowledge is jealously guarded/openly shared.

It is our hope that these reflections upon situated learning theory, together with our reinterpretation of Orr's (1990, 1996) findings, demonstrate the relevance of recognizing and developing the radical dimension of Lave and Wenger's (1991) thinking, and then incorporating its insights into analyses of learning in organizations. We hope that our critique of their work and its dissemination will stimulate others to rise to the analytical challenge, posed initially by the viewpoint advanced in *Situated Learning*, of showing more precisely and persuasively how learning, as a situated practice, is "a complex notion, implicated in social structures involving relations of power" (Lave and Wenger 1991, p. 36). Our conviction is that the analytic potential of a situated understanding of learning will be fulfilled only when studies of learning in organizations more fully appreciate and demonstrate how learning processes are inextricably implicated in the social reproduction of wider institutional structures.

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## Appendix

**Table 1 Established and Situated Conceptualizations of Learning Compared**

| Conceptualization | Established | Situated |
|---|---|---|
| Learning | Cognitive—Passive—Selective | Interactive—Participative—Pervasive |
| Form of knowledge | Canonical/Codified/Theoretical Distilled in texts and manuals | Tacit/Embedded/Practical Embedded in community and identity |
| Understanding developed | Abstract/Universal | Embodied/Context-sensitive |
| Outcome of learning | Acquisition of information or skill | Trans(formation) of identity |
| Transmission | Vertical: Instruction by authorities | Horizontal: Collaboration with peers |

## Endnotes

[1]See, for example, in education the contributions to *Educational Researcher* (1989, 1996, 1997); in Organisational Learning see, among the others, the special issues in *Organization Science* (1991), *Management Learning* (1998), and *Organization* (2000).

[2]Even "reflexive" approaches that encourage some questioning of established assumptions and recipes of action and/or the conditions that facilitate their interrogation (e.g., Argyris and Schön 1978) share this objective of seeking to identify and codify processes of learning (e.g., double loop and deutero learning).

[3]Even when established conceptualizations of learning pay some attention to the interaction between teacher and novice, their focus is upon transmission or assimilation in a way that leaves processes of participation in relations largely unexplored (see Lave and Wenger 1991, p. 47).

[4]Exploring the "genealogy" of this conceptualization and looking at its own "situatedness," the Institute for Research on Learning has played, and continues to play (Greeno 1998, Cook and Brown 1999), the role of catalyst in the work of the leading exponents of this influential elaboration of learning in practice. In particular, Jean Lave's work, and the seminars organized at the institute in the 1980s, which included an attentive reading of Marx (Jean Lave, personal communication), are to be considered "groundbreaking," as also acknowledged in Brown et al. (1989, p. 41). In her subsequent work Lave (1993) maintains a radical conception of knowledge, but the same cannot be said for Wenger (2000). For a discussion of the latter, see Contu and Willmott (2000).

[5]Brown and Duguid's (1991) account of situated learning is underpinned methodologically by an assumption that learners and researchers can gain direct access to "actual practices," thereby seemingly avoiding the "abstractions detached from practice" found in established accounts of learning research (and methodologies). There is no recognition of how situated learning theory appeals to a different set of abstractions, such as "community of practice," "innovation," and "legitimate peripheral participation" as it presses its claim



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to appreciate "the details of practice [that] have come to be seen as nonessential, unimportant, and easily developed once the relevant abstractions have been grasped" (Brown and Duguid 1991, p. 40). Nor is there any acknowledgement or exploration of how, in common with other discourses, situated learning theory is engaged in constituting the phenomena that is aspires to reflect or capture.

[6]See, for example, the COPs 2000 Event (repeated in 2001) organized in London by the *Knowledge Management Magazine* that features IBM, Siemens, and Shell consultants, academics and members of the Department of Trade and Industry of the British Government, and functionaries of the European Commission amongst its experts.

[7]Suchman (2000), stressing her interest in "practice" rather than in "learning," nonetheless states: "I assume learning in the sense developed by Lave and Wenger (1991) and Lave (1993), and others taking inspiration from them to be intrinsic to all forms of practice" (Suchman 2000, p. 325).

[8]In particular, when stressing the importance of language, Lave and Wenger (1991, p. 109) refer to Orr's work to show the importance of participation in talking about/within a practice.

[9]This clarification of our intent with respect to our use of Orr's work indicates a sensitivity to the possible charge that we hijack his study, and reinterpret it in ways that are not grounded in, or supported by, his data. Of course, we have had no access to Orr's primary materials. We are therefore unable to discover whether some data excluded from his published work might provide support for our argument. We rely entirely upon his published work, supplemented by some constructive exchanges with him. We also fully respect his intent, as an ethnographer, to "tell it like it is." But we view such intentions as inescapably mediated by the theoretical lens that simultaneously enables and restricts the process of recording and interpreting field data. To be clear, our contention is not that Orr was incompetent or missed what was self-evidently there, but that what he presents in his published output can be reinterpreted to illustrate the value of paying greater attention to the radical dimensions of work that are central to Lave and Wenger's conception of situated learning, and which are disregarded in the writings of popularizers who use Orr's study to illustrate their interpretation of situated learning theory.

[10]Towards the end of *Talking About Machines*, Orr (1996, p. 149) defends his focus upon the *work* practices of the technicians by contrasting it with studies that concentrate their attention upon "relations of *employment*" in which, he contends, "work" is reduced to considerations of status and reward (1996, p. 48; see Contu 2000 for an extended discussion). This division ostensibly provides a justification for the abstraction of the technicians' work from its wider institutional context. In a review of Orr's *Talking About Machines*, Vaughan (1999) usefully locates the technicians at a point of pressure between the claims of the company to produce reliable and readily repaired machines and the experience of customers who encounter repeated breakdowns and delays in restoring an expected level of operation. Vaughan (1999, p. 432) notes how Orr "does not pursue further the larger organizational and occupational context or what it might imply about the community values he found." When Orr's technicians are situated within their institutional context, she argues, "community values take on a different meaning." This "different meaning," Vaughan plausibly suggests, is one of "clean-up work." As wearers of business suits who convey a professional appearance while undertaking messy repairs or making courtesy calls, the technicians are enjoined to project an impression of customer care. The work undertaken by the technicians can be seen to smooth out (i.e., "clean-up") deficiencies built into the machines and their manuals by pressures on cost and a hierarchical, fragmented division of labor designed (also) to control employees rather than (simply) to build reliable copiers, effective manuals, and responsive service agents.

[11]The strategy of downskilling is also mentioned in Brown and Duguid (1991), but no attention is directed to its wider significance in terms of power relations and resistance. Rather, downskilling is understood, unsurprisingly given their functionalist view, to provide a "response" in the technicians' behavior in terms of what they call "up skilling"—i.e., the fact that the technicians' tasks become more improvisational and complex (Brown and Duguid 1991, p. 42).

[12]This assumes that the copier technicians lacked an income derived from capital holdings, so they were obliged to support themselves by selling their labor (or otherwise engaging in acts of crime or become dependent on the state or charity).

[13]We are not asserting that this heroic narrative developed *ex nihilo*, and we are not proposing a structural functional argument in the guise of critical analysis. We suggest that such a narrative has its own conditions of existence in wider social issues that could include, for example, individualism and certain conceptions of masculinity. A developed argument in such a direction is beyond the scope of this article. Here it suffices to say that in Orr (1990, 1996, 1998) the work of technicians is shown to present a continuous "challenge" to conquer the recalcitrance of the machines, and that the sharing of knowledge is mostly achieved through "war stories" in exchanges that are also described as a "duel." Such wording is not random or innocent. It is strongly associated, we suggest, with notions of masculinity and individual competition—values that are pervasive in capitalist societies and that provide a grid of intelligibility for accounting for technicians' practice. (See Contu 2000 for a discussion of Orr's narrative of heroism in the account of technicians' practice.)

[14]This proclivity resonates with Action Learning where knowledge that is external to the learning set or community of practice is ignored or devalued (Willmott 1997a, b).

[15]The argument being made here is that practices which routinely attract the epithet "spontaneous" are no more "natural," in the sense of being closer to "human nature," than practices that are characterized as "contrived" or "guarded."

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# About Authors

**Beth A. Bechky** ("Sharing Meaning Across Occupational Communities: The Transformation of Understanding on a Production Floor") is an assistant professor at the Graduate School of Management, University of California, Davis. She received her Ph.D. from Stanford University. Her research interests include technical work and occupations and organizational coordination. Her recent projects examine occupational jurisdiction in a manufacturing facility and the coordination of the interdependent work of film production. **Address:** Graduate School of Management, AOB IV, University of California, Davis, 1 Shields Avenue, Davis, CA 95616; telephone: (530) 752-0911; fax: (530) 752-2924; e-mail: babechky@ucdavis.edu.

**Glenn R. Carroll** ("Shifting Gears, Shifting Niches: Organizational Inertia and Change in the Evolution of the U.S. Automobile Industry, 1885–1981") is the Laurence W. Lane Professor of Organizations at the Graduate School of Business and (by courtesy) Professor of Sociology at Stanford University. His most recent book is *The Demography of Corporations and Industries*, coauthored with Michael T. Hannan, (Princeton University Press, 2000). He received his Ph.D. in sociology from Stanford University. **Address:** Stanford University, 518 Memorial Way, Stanford, CA 94305; e-mail: carroll_glenn@gsb.stanford.edu.

**Alessia Contu** ("Re-Embedding Situatedness: The Importance of Power Relations in Learning Theory") is a lecturer in the Department of Management Learning at Lancaster University. She is currently studying the politics of learning and organizational change in the context of the digital industry. **Address:** Department of Management Learning, University of Lancaster, Bailrigg, Lancaster LA1 4YW, U.K.; telephone: +44 01524 593820; fax: +44 01524 844262; e-mail: a.contu@lancaster.ac.uk; home page: http://www.lums.lancs.ac.uk/staffProfiles/People/DML/00000139.

**Jerker Denrell** ("Vicarious Learning, Undersampling of Failure, and the Myths of Management") is an assistant professor at the Institute of International Business, Stockholm School of Economics, Sweden. His current work examines the complications of learning and imitation in competitive contexts, exploration and risk taking in organizational learning, credit assignment in learning processes, and the economics of strategic opportunities. **Address:** Institute of International Business, Stockholm School of Economics, P.O. Box 6501, SE-113 83, Stockholm, Sweden; telephone: +46 8 (0)7 36 95 04; fax: +46 (0)8 31 99 27; e-mail: jerker.denrell@hhs.se.

**Stanislav D. Dobrev** ("Shifting Gears, Shifting Niches: Organizational Inertia and Change in the Evolution of the U.S. Automobile Industry, 1885–1981") is an assistant professor of organizations and strategy in the Organizations and Markets Group at the University of Chicago. His current research investigates the ecological dynamics of strategic moves and the relationship between organizational processes and career progression. He received his Ph.D. in sociology from Stanford University. **Address:** University of Chicago, Graduate School of Business, 1101 East 58th Street, Chicago, IL 60637; e-mail: stanislav.dobrev@gsb.uchicago.edu.

**Nicolai J. Foss** ("Selective Intervention and Internal Hybrids: Interpreting and Learning from the Rise and Decline of the Oticon Spaghetti Organization") is Professor of Economic Organization, and Director of the Learning, Incentives, and Knowledge (*LINK*) Program, Copenhagen Business School. His research, which centers on firm strategy, the theory of the firm, and new organizational forms, has been published in *Organization Science*, the *Journal of Management Studies*, *Industrial and Corporate Change*, as well as other journals. **Address:** *LINK*, Department of Industrial Economics and Strategy, Copenhagen Business School, Solbjergvej 3; 2000 Frederiksberg, Denmark; e-mail: njf.ivs@cbs.dk.

**Ranjay Gulati** ("Getting Off to a Good Start: The Effects of Upper Echelon Affiliations on Underwriter Prestige") is the Michael L. Nemmers Distinguished Professor of Strategy and Organizations at the Kellogg School of Management, Northwestern University, and a member of the Department of Management and Organizations. He holds a Ph.D. in organizational behavior, a M.A. in sociology from Harvard University, and a Master's in management from the M.I.T. Sloan School of Management. His research explores the social foundations of economic outcomes with a focus on the dynamics of interorganizational networks. His work has appeared in journals such as *Administrative Science Quarterly*, the *Strategic Management Journal*, the *Academy of Management Journal*, the *Harvard Business Review*, and the *Sloan Management Review*. **Address:** Kellogg School of Management, Northwestern University, Department of Management and Organizations, 2001 Sheridan Road, Evanston, IL 60208-2001; e-mail: r-gulati@nwu.edu.

**Monica C. Higgins** ("Getting Off to a Good Start: The Effects of Upper Echelon Affiliations on Underwriter Prestige") is an associate professor in the Organizational Behavior Unit at Harvard Business School. She earned her Ph.D. in organizational behavior, her MA in psychology from Harvard University, and her MBA from the Amos Tuck School of Business Administration at Dartmouth. Her research and teaching focuses on careers. In particular, her research examines how individuals' prior work experiences and developmental networks shape the course of their careers as well as the firms they lead and manage. She is engaged in two major research projects at present. The first is a longitudinal study of the career choices and work lives of Harvard MBA students (Class of 1996). The second examines how the career experiences and relationships of biotechnology executives have shaped the evolution the biotechnology industry. Her work has appeared in journals such as the *Academy of Management Review*, the *Strategic Management Journal*, the *Journal of Organizational Behavior*, and the *Journal of Applied Behavioral Sciences*. **Address:** Harvard Business School, Organizational Behavior Unit, Soldiers Field Park, Boston, MA 02163; e-mail: mhiggins@hbs.edu.

**Tai-Young Kim** ("Shifting Gears, Shifting Niches: Organizational Inertia and Change in the Evolution of the U.S. Automobile Industry, 1885–1981") is an assistant professor in the Department of Management of Organizations, Hong Kong University of Science and Technology, Clear Water Bay, Kowloon, Hong Kong. His current research focuses on how experiential learning and location affect organizational change and mortality rates in American and Italian automobile manufacturers and Japanese multinational corporations in the People's Republic of China. He is also interested in how an organization's market position and learning affect rates of incremental and radical innovations in the U.S. automobile industry. In addition to organization-level analyses, he is currently working on a series of papers examining how individual



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career identity in a labor market is formed and how it affects performance in the U.S. film industry. He received his Ph.D. in sociology from Stanford University. **Address:** Hong Kong University of Science and Technology, Clear Water Bay, Kowloon, Hong Kong; e-mail: mnkim@ust.hk.

**Xavier Martin** ("Tacitness, Learning, and International Expansion: A Study of Foreign Direct Investment in a Knowledge-Intensive Industry") wrote most of his paper while on the faculty of the Stern School of Business, New York University. He will join Tilburg University's Faculty of Economics and Business Administration starting in 2003–2004. Xavier's research combines management and economic lenses to examine how corporate strategies, interfirm relationships, and knowledge-based assets coevolve and affect firm performance. His papers have appeared and/or are forthcoming in *Administrative Science Quarterly,* the *Strategic Management Journal,* the *Journal of International Business Studies, Research Policy, Advances in Strategic Management,* and other publications. He is a recipient of the Best International Paper Award from the Academy of Management and the Richard N. Farmer Best Dissertation Award from the Academy of International Business. **Address:** Stern School of Business, New York University, 40 West Fourth Street, New York, NY 10012; telephone: (212) 998-0414; fax: (212) 995-4221; e-mail: xmartin@stern.nyu.edu; and Tilburg University, P.O. Box 90153, 5000 LE, Tilburg, The Netherlands; telephone: +31-13-4662315; fax: +31-13-4668354.

**Robert Salomon** ("Tacitness, Learning, and International Expansion: A Study of Foreign Direct Investment in a Knowledge-Intensive Industry") is currently an assistant professor of management at the University of Southern California's Marshall School of Business. His research interests revolve around the management and economics of international expansion. Specifically, he investigates how knowledge and technology influence foreign entry mode decisions, and how those entry mode decisions subsequently influence firm performance. **Address:** Marshall School of Business, University of Southern California, 303E Bridge Hall, Los Angeles, CA 90089; telephone: (213) 821-5669; fax: (213) 740-3582; e-mail: salomon@marshall.usc.edu.

**Hugh Willmott** ("Re-Embedding Situatedness: The Importance of Power Relations in Learning Theory") is Diageo Professor of Management Studies at the University of Cambridge and a visiting professor at the Universities of Lund and Cranfield. He received his Ph.D. from the University of Manchester and has served on the editorial boards of a number of journals including *Administrative Science Quarterly, Organization, Organization Studies and Accounting*, and *Organizations and Society.* **Address:** Judge Institute of Management Studies, University of Cambridge, Trumpington Street, Cambridge CB2 1AG, U.K.; telephone: ++44 (0) 1223 339633; fax: ++44 (0) 1223 764225; e-mail: h.willmott@jims.cam.ac.uk; home page: http://dspace.dial.pipex.com/town/close/hr22/hcwhome.



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