Occupational Control in Education: The Logic and Leverage of Epistemic Communities

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Most current approaches to improving teaching and learning in American public schools rely on either market pressures or bureaucratic controls to leverage performance. In this article, however, authors Joshua Glazer and Donald Peurach examine occupational control as a third approach, whereby the internalization of norms, technical language, and practices among educational professionals drives coordination and knowledge generation and supports the implementation of ambitious instruction. To investigate the dynamics of occupational control, they use the concept of epistemic community to identify the mechanisms that unite practitioners into a community of practice extending beyond the borders of local work environments. They argue that underlying this is a shared set of theory, codes, and tools that govern interpretation and practice and, in their interaction, facilitate the continuous generation of knowledge. Illustrating the utility of this framework are two examples of school networks that employ the principles and mechanisms of an epistemic community and that can be interpreted as systems of occupational control. The authors conclude by arguing that the development of educational epistemic communities is critical to the success of current approaches to improving instruction in schools, most notably the Common Core State Standards and the charter school movement.

The question of how instructional work is coordinated and controlled has long occupied sociologists interested in the organization of expert knowledge. Beyond theoretical concerns, the topic of control is also a practical matter for the development and organization of instructional expertise as a key determinant of student performance. But what are the principal forces that exert...
control on instructional practice, what system of control is best aligned with instruction, and what would be involved in developing and maintaining such a system?

In this article we address these and other related questions by employing the concept of *epistemic community* to illuminate the key components of a system in which control of instruction is embedded in the internalization of shared norms, technical language, and practices among members of the teaching occupation. Such a system, we argue, is well aligned with the uncertain and contingent nature of the “ambitious instruction” needed to meet current policy objectives (Cohen, 2011; Lampert, Boerst, & Graziani, 2011). Ambitious instruction aims to enable all students to develop a deep understanding of content and acquire complex analytic and problem-solving skills. We further contend that, in an epistemic community, instructional practice is controlled in ways that are particularly well suited to the wide-scale development and application of relevant expertise.

Our focus on occupational control is not motivated by the belief that teaching can be wrested from the influence of the state or capitalist institutions but, rather, by the notion that viable educational epistemic communities can provide much-needed balance to the market and bureaucratic strategies that inform current approaches to school improvement. Moreover, we propose a broader definition of the “teaching occupation” than has been the norm in education. In breaking from the usual approach that distinguishes among practitioners, administrators, and other positions in the traditional hierarchy (e.g., Kunda & Van Maanen, 1999), we advocate a conception of “occupation” that captures the rich collection of roles that support instruction and its improvement. From this perspective, the teaching occupation can be seen as including such roles as classroom teacher, instructional coach, department chair, building principal, and even non-school-based professionals such as members of university-based project teams and nonprofit organizations. This inclusive definition derives from our systemic analysis of the roles and functions that support a system of occupational control.

In the first section we situate the topic of instructional control within a line of sociological theory and research that investigates the variable ways that markets, bureaucracies, and occupations control and organize expert knowledge. We then elaborate the relationship between occupational control and epistemic communities by synthesizing the literature on epistemic communities and integrating it with several related intellectual traditions, including the sociology of the professions, cognitive psychology, and organizational theory. In the third section we elaborate the mechanisms by which epistemic communities continuously generate, use, and refine knowledge. Next, we begin to apply our framework to education by examining some of the major barriers that have prevented the teaching occupation from functioning as a dynamic epistemic community. We continue our analysis of educational epistemic communities in the final section by examining two school networks that incorpo-
rate key principles of an epistemic community, America’s Choice and Success for All. In these networks, internal systems of knowledge generation shape the approach to practice despite formidable bureaucratic and market pressures. In concluding, we assert that systems organized around the principles of epistemic community are conducive to the development and use of instructional knowledge and key to enabling major policy initiatives such as the Common Core State Standards and the charter school movement to successfully improve instruction.

Control of Instruction: Bureaucracies, Markets, and the Teaching Occupation

_Bureaucratic and Collegial Control_  
Researchers have long noted that the organization and management of instruction present a puzzle.¹ More than forty years ago, Bidwell (1965) noted that traditional bureaucratic controls in which performance is managed by a clear set of rules and managerial oversight are not well aligned with educational work due to what he perceived as the highly individualized and contingent nature of instructional practice in the United States. The tension between bureaucracy and instructional practice was resolved, he claimed, by a “structural looseness” that enabled teachers to manage classrooms more according to personal style than to a formal set of rules. John Meyer and his colleagues famously advanced this line of research in arguing that school administrators, facing strong institutional environments and weak technical environments, focused on creating the “impression of rationality” rather than on actively managing teaching and learning (Meyer & Rowan, 1977; Meyer, Scott, & Deal, 1983). Thus, while schools may have resembled traditional bureaucracies, most key instructional decisions were left to the discretion of teachers with little administrative oversight or guidance.

In addition to the relatively modest influence of bureaucratic instruments over instructional practice, research has also found that collegial forms of control are often surprisingly weak. Scholars suggest that U.S. teachers have rarely chosen to collectively work out problems of practice, establish common professional norms, or ensure adherence to standards of work (Cusick, 1983; Little, 1990; Lortie, 1975). As Rowan (1990) observes, “Public schools and school systems, it seems, are large bureaucracies without strict bureaucratic controls and highly professional organizations that lack collegial forms of collaboration and control” (pp. 354–355).

In many ways, the relative weakness of collegial and bureaucratic controls reflects a broader environment in which multiple sources of guidance rarely communicate consistent or coherent messages about what and how teachers should teach. These sources include district, regional, state, and national education agencies; professional associations; university-based projects; nonprofit reform enterprises; and commercial organizations. Decades of research have
shown that the contested goals of education interact with a fractured political system in ways that make schools vulnerable to diverse and often competing interests and constituencies. These inconsistent signals fragment schools into a mix of uncoordinated programs and leave teachers with ample reasons to close their door and keep out the noise (Cohen & Spillane, 1992; Labaree, 2010; Powell, Farrar, & Cohen, 1985; Rowan, 2002).

While formal systems of control have had weak effects on practice, the influence of the inherited beliefs and practices that teachers bring from their experience as students has held considerable sway over instruction. Professional socialization processes, such as pre-service training and student teaching, have historically done little to reverse deeply entrenched notions of what it means to be a teacher or what counts as good teaching, and equally little to cultivate the analytic orientation toward practice that is characteristic of professionals in other fields (Lortie, 1975; Sykes, Bird, & Kennedy, 2010). The result is that American teaching has at once been stable and predictable yet largely disconnected from any formal system that establishes and validates its chief practices or advances the overall capability of the field (Cohen, 2011; Cohen & Spillane, 1992; Dreeben, 2005; Mehta, 2013). Teaching is largely consistent in its practice, but, as an occupation that includes teachers and other professionals dedicated to the practice and improvement of instruction, it is static and lacks the means to integrate new knowledge or adapt to new demands.

Surprisingly, this predicament has not dampened enthusiasm for a new generation of bureaucratic controls intended to drive large-scale improvement. Standards and accountability, certification standards, pre-service requirements, and value-added teacher evaluations may seem more sophisticated than the curricular controls, supervisory practices, and grade-level objectives of the 1980s (Rowan, 1990). Yet they share a common belief that instruction can be improved via regulation without meaningful changes in the organizations and institutions responsible for producing knowledge of effective instruction, reforming the fundamental pedagogical approaches underlying teachers’ pre-professional and professional development, or coordinating these changes with the production of curricula, assessments, and other such resources.

Less surprising is the relative ineffectiveness of these policies. For example, despite the popularity of value-added measures of teacher effectiveness, observers have noted that technical limitations, variation in their design within and across states, and the fact that they are not linked to a common curriculum limit their potential (Cohen & Moffitt, 2010; Hill, Kapitula, & Umland, 2011; Sykes et al., 2010). Even if these obstacles are overcome, formal evaluations of this nature do nothing to improve the quality of teaching or build knowledge of practice. Likewise, while standards and accountability have taken an increasingly tough-minded approach to compel changes in teaching and learning, the effects on student achievement have been weak and inconsistent, with U.S. public schools nowhere near the goals for universal “on standard” student performance set out in the No Child Left Behind Act of 2001.
In short, while bureaucratic controls on teaching have become increasingly stringent, they have not led to consistently meaningful changes in practice or outcomes. Further, researchers have documented troublesome, unintended effects of bureaucratic controls on instructional practice, such as narrowing of the curriculum, teaching to the test, and devoting disproportionate resources to students just below proficiency (Katz & Rose, 2013; Koretz & Jennings, 2010; Ravitch, 2010). Other scholars have argued that the unitary focus on assessment is a thin platform on which to evaluate and thus advance practice on an individual or occupational level. As Sykes et al. (2010) put it, reducing the definition of effective teaching to assessment outcomes “strips out of consideration what cannot be measured and so provides an impoverished basis for occupational competence” (p. 471).

**Market Control**

Those who support market-based approaches to education, such as charter schools and voucher programs, seek to replace bureaucratic control of instruction with a system of consumer control. They argue that the competitive pressures from a system of choice will drive innovation in practice while ridding schools of the excessive regulation and competing goals that they see as characteristic of bureaucratic control and detrimental to organizational coherence and performance (Chubb & Moe, 1990).

According to this logic, competition and consumer preference exert pressure on practice and school performance that, in turn, leads to new levels of instructional innovation and improvement. Moreover, advocates argue that, by weakening the connection between school governance and democratic politics, a system of market-based control would enable schools to concentrate on a more circumscribed set of goals rather than the “something for everyone” approach that has traditionally characterized public schools (Powell et al., 1985). The interplay of a more coherent set of goals, a like-minded faculty (chosen by a principal with the freedom to hire and fire teachers), and school-level autonomy is thought to empower schools to adapt instruction and curriculum to the needs of students while establishing the conditions that support collegial learning and improvement (Bulkley & Fisler, 2003; Chubb & Moe, 1990).

The evidence base in support of these ideas is highly contested and variable, and a full treatment of the research literature is beyond the scope of this discussion. With regard to the influence of choice programs on instruction, the existing research literature provides little evidence one way or another. A more extensive body of scholarship investigates the connection between choice and student learning outcomes, though the results are largely inconclusive. Some studies have documented cases in which voucher programs allowing students to use state funds to attend private schools have benefited a particular group of students (e.g., Wolf, 2012), whereas other research has found little or no evidence of a positive effect (e.g., Wolf et al., 2013). Like-
wise, there is scant evidence that the pressure voucher programs presumably place on districts has had a transformative effect on student performance. As Hess (2010) points out in his review of the literature, choice advocates would be wise to temper expectations.

This research base precludes broad generalizations about the relationship between charter schools and instructional quality. Considerable attention has been devoted to the “no excuses” model adopted by some high-profile charter operators, but these models are more known for their approach to classroom and behavior management than for their quality of instruction. Research that has adopted a more fine-grained approach to examining instruction in charter schools has documented extensive variation in regard to practices and basic conceptions of teaching and learning (Furgeson et al., 2012; Glazer, Massell, & Malone, 2015). Some commentators have argued that few individual schools, charter or otherwise, have the organizational capacity to develop, coordinate, and implement curriculum, instruction, assessment, leadership and other key functions that form the basis of coherent and ambitious systems of instruction. As Cohen puts it in his analysis of school choice and decentralization, “the assignment seems entirely out of scale” (Cohen, 1990, p. 377).

In regard to the impact of charter schools on student outcomes, the research base reveals considerable inconsistency. Until recently, most evaluations have found little or no evidence that charter schools, writ large, are more effective than traditional public schools, and several studies have documented lower levels of student achievement for charter school students (Hanushek, Kain, Rivkin, & Branch, 2007; Imberman, 2011; Zimmer & Buddin, 2006). Some recent research has pointed to a modestly upward trend in charter school effectiveness (e.g., CREDO, 2013; Witte et al., 2014), but results are still far less than what advocates initially anticipated. Moreover, the fact that charters have been found to exacerbate segregation of students along racial and income lines, and are often poorly equipped to handle students with exceptional needs (Erickson, 2013; Hochschild & Scovronick, 2003; Jochim, DeArmond, Gross, & Lake, 2014; Rotberg, 2014), further reduces their appeal, particularly in the absence of strong effects.

While charter schools, overall, have not significantly outperformed traditional public schools, the handful of charter management organizations that has developed robust instructional systems is worthy of note. Organizations such as Aspire and Achievement First have invested extensive resources to develop complex, multifaceted designs for instruction and leadership that shape practice across their respective networks of schools (Glazer et al., 2015; Rosenberg, 2012). Reminiscent of the more successful comprehensive school reform programs such as Success for All (SFA), America’s Choice, and the Comer School Development Program, these design-based approaches integrate multiple dimensions of teaching and learning, including curriculum, pedagogy, classroom organization, assessment, and more. They also provide extensive learning opportunities for teachers and leaders to gradually increase
their capacity to use the design in practice. As we elaborate below, a combination of market, bureaucratic, and occupational controls undergirds these dynamic systems of knowledge generation and use.

**Occupational Control**

A third system for organizing expert knowledge is when an occupation controls the development, refinement, and use of a particular knowledge base. Sociological analyses by scholars such as Weber (1978), Durkheim (1947), and Parsons (1939) have claimed that, in areas of work with a high degree of unpredictability and complexity, and with outputs that are difficult to measure, effectiveness is maximized through the internalization of knowledge and technique among practitioners rather than by market pressures or bureaucratic organization.

In systems of occupational control, the organization of clinical work and the development and application of the technical core are managed predominantly (though never exclusively) by the occupation itself. Freidson (2001), chronicling the evolution of American professions throughout the twentieth century, explains that occupational forms of control “remain largely intact because complex, esoteric knowledge and skill is difficult to organize in any other way” (p. 208). Evetts (2006), studying British professions, also makes the point that occupational control fits well with the high degree of uncertainty, complexity, and risk that characterizes life in contemporary societies.

What would an occupational system of control of instruction look like in education? The question implies another, which is whether instruction is in fact complex and uncertain work. Contemporary scholarship has emphasized the uncertainty and difficulty of teaching in modern-day classrooms, but the degree of complexity depends at least in part on the type of instruction in question. The traditional teaching that researchers have observed in American classrooms over decades is neither particularly complex nor uncertain. “Basic skills” instruction in which knowledge is conceptualized as established facts, transmitted via didactic instruction, and assessed by recitation (verbally or in writing) entails a more modest set of capabilities and less risk than the more ambitious instruction advocated by many current reformers. Perhaps this is why it has proven largely ineffective in meeting policy goals that demand high levels of achievement for all students (Cohen, 1990, 2011).

Conversely, teaching that seeks to cultivate understanding of complex representations of subject matter and that enables students of all backgrounds to solve multidimensional and authentic problems is a far more uncertain and difficult undertaking (Cohen, 2011). A wealth of research has shown that in contrast to more traditional teaching, “ambitious” instruction requires that teachers continuously refine diagnostic assessments of student understanding, nimbly represent content and structure tasks in ways that correspond to variable learning needs, and simultaneously manage complex classroom environments. This type of instruction is characterized by a high degree of com-
plexity, uncertainty, and risk and, as such, requires considerable knowledge and skill (Ball, Sleep, Boerst, & Bass, 2009; Cohen, 2011; Labaree, 2012; Lampert et al., 2011; Lampert & Graziani, 2009). As we elaborate below, for this type of instruction to be enacted on a consistent basis, it must be embedded in a well-designed system of practice in which multiple roles and functions—such as school leadership, curriculum design, and coaching—collectively support classroom work. Our purpose in considering occupational control of instruction, then, is not simply to swap one form of control for another. Rather, it is to identify a system well suited for supporting collaboration and knowledge building among a diverse group of members who collectively manage the uncertainty, challenges, and other exigencies of large-scale instructional improvement.

The tension between the imperative for more reform-oriented, ambitious instruction and the historical prevalence of traditional teaching complicates the issue of occupational control in education. On the one hand, both evidence and theory suggest that the systems of control embodied in market-based reforms or more stringent regulation are unlikely, on their own, to drive meaningful improvements in the development and use of instructional knowledge. On the other hand, the inherited norms and practices that have held sway over instructional practice for decades have also proven inadequate to meet the demands of contemporary reforms (Dreeben, 2005; Glazer, 2005; Lortie, 1969, 1975; Sykes et al., 2010). As Lortie (1969) argued several decades ago, “Teachers have not developed codified and systematic bodies of professional knowledge [and] lacking that knowledge, their stance vis-à-vis laymen is, in turn, weakened” (p. 24). Dreeben (2005), writing thirty-six years later, reiterated Lortie’s point in claiming that the teaching occupation’s lack of control over its work comes not from the bureaucratic nature of the school system but from the lack of occupational competence: “In law, medicine, and engineering, occupational competence exists and can flourish in bureaucratic settings. In teaching, there is reason to believe that the same reality can hold. But questions must be raised about the level of competence” (p. 5).

The assertion that some occupations have succeeded in demonstrating control and competence in complex bureaucratic settings raises the question as to how these occupations have organized the production and use of their knowledge and how this organization in turn supports occupational control. To address the first of these questions, we elaborate and apply the concept of “epistemic community” to show how some occupations are able to continuously create, share, and refine knowledge. Subsequently, we elaborate the way in which epistemic communities support occupational control.

Epistemic Communities: Theories, Codes, and Tools

The term *epistemic community* may be familiar to readers acquainted with the vast literature on practitioner communities. In employing the epistemic com-
munity concept, however, we draw important distinctions between epistemic community and other practitioner community models. For example, while an epistemic community appears similar to the popular notion of “community of practice,” there is a critical difference. The community of practice model is bound to a single geographic context in which practitioners work in close proximity to one another and thus transfer knowledge via person-to-person interactions (Cook & Yanow, 1993; Lave & Wenger, 1991). Conversely, in epistemic communities, diverse practitioners in disparate locations interpret, perform, and talk about work in highly similar ways.

The epistemic community construct also differs from the concept of social capital, which is commonly used by education researchers to conceptualize social interactions among practitioners. Whereas theories of social capital typically assume that individuals share the cognitive frames and prior knowledge needed to support meaningful interaction, the epistemic community model centers on the development of shared cognitive frames, knowledge, and vocabulary that social capital models typically assume.

Finally, although we eschew definitional squabbles about what constitutes a profession (or the difference between a profession and an occupation), we do show how our model highlights key processes that are rarely examined by the literature on the professions, both in education and generally. The literature on the education profession has generally pursued two broad lines of inquiry that focus, first, on overarching analyses of the education sector (e.g., Mehta, 2013) and second, on the dynamics of professional relations within schools (e.g., Hargreaves & Fullan, 2012; Levin, 2008). Each is important, but, like the community of practice model and the social capital framework, neither identifies the processes by which entire fields systematically build knowledge or the institutional mechanisms that enable people across disparate worksites to interpret and use knowledge with consistency.

Definitions

First introduced by German sociologist Burkhart Holzner (1968), the concept of epistemic community was initially intended to show how occupants of a particular role construct and organize knowledge in a manner that supports common ways of interpreting events and explaining causal relationships: “Social roles in their orientational [sic] function provide epistemologies, basic categorical schemes, preference systems, and methodologies through which the role occupant organizes the encountered experiences and provides explanations for them” (Holzner, 1968, p. 65). Following Holzner, researchers from different intellectual traditions used the idea of epistemic community to explain an array of social phenomena. For example, some political scientists have argued that epistemic communities play a critical role in the formation of international policy by countering the political interests of states, thereby serving as “channels through which new ideas circulate from societies to governments as well as from country to country” (Bukhari, 2004; Haas, 1992, p. 27).
More recently, some organizational theorists have employed the idea of epistemic community to better understand the management and organization of knowledge within and across firms. Håkanson (2007, 2010) has argued that epistemic communities are critical for understanding how knowledge is created and transferred within and across organizational boundaries and that this has far-reaching implications for organizational structure and management. Håkanson, whose approach we adopt here, defines an epistemic community as a diverse group of people bound by a common set of theories, codes, and tools that govern interpretation, practice, and communication. He sees this triad as being at the center of all expert communities:

Whether based on the highly tacit knowledge of traditional crafts or on the explicit theories that underlie activities in so-called “science-based” industries, all practice encompasses three fundamental elements: cognitive frames (“theory”), coding schemes and other symbolic means of expression (“code”), and the technology embedded in physical artifacts (“tools”) (Håkanson, 2007, p. 63).

Theories, codes, and tools constitute the infrastructure on which an epistemic community’s knowledge of practice is developed and are the basis for sharing, refining, and applying that knowledge. While this frame stems most directly from Håkanson’s work, our depiction of these ideas encompasses research and theory from sociology, anthropology, cognitive psychology, and education that, together, contribute to a more robust discussion.

Theory

Theory refers to the accepted set of causal relationships that undergird an epistemic community’s problem-solving capacity. Theory, in this context, can entail a scientifically validated set of causal relations but can also include a set of commonly held understandings, or “rules of thumb,” about the nature of practice (Haas, 1992). For example, Lampert and Graziani (2009), in writing about a professional community of Italian language teachers, employ the similar notion of “rules of engagement,” which they see as critical for scaffolding new teachers into incrementally more ambitious forms of practice. In his seminal analysis of the professions, Abbott (1988) similarly argues that the causal relationships which practitioners perceive between diagnoses and treatments constitute the primary organizing mechanism of professional practice. Likewise, Haas (1992) sees a common set of “causal beliefs and notions of validity” as a central force that ties individuals into a single epistemic community.

Theory serves at least two purposes in an epistemic community. First, it enables the community to interpret and learn from its experiences by situating those experiences in an organizing schema that infuses them with meaning (Håkanson, 2007; Kogut & Zander, 1992). In this way, shared theoretical assumptions create a common basis for the interpretation of practice among practitioners who might otherwise arrive at very different conclusions. As Håkanson (2007) writes, “Data without reference to cognitive schemata are
meaningless” (p. 57), and if those schemata are not shared, then neither will be the meaning derived from them. Likewise, some education researchers have argued that common theoretical understandings about the relationship between teaching and learning must be a central tenet of any effort to establish a professional knowledge base, in that these understandings provide a framework for generalizing from day-to-day experiences (Hiebert, Gallimore, & Stigler, 2002).

Second, theories serve as problem-solving tools by which practitioners deconstruct and analyze situations that are unfamiliar or are characterized by unexpected results. For example, cognitive research into medical decision making has shown that, when routine diagnosis and treatment procedures break down, doctors fall back on theoretical understandings to make sense of an otherwise perplexing situation (Patel, Arocha, & Kaufman, 1999). This is particularly germane to the unpredictable nature of ambitious instruction, where there are relatively fewer tried-and-true practices that render predictable responses (Ball & Cohen, 1999; Sykes et al., 2010). In problem spaces of this nature, theoretical knowledge can serve as a set of “intellectual tools” that enable teachers to adapt and develop practice in “the unpredictable situations that we call classrooms” (Ball & Cohen, 1999, p. 10).

The role of theory highlights a key difference between epistemic community and social capital. Research motivated by theories of social capital typically assumes that individuals who belong to the same organization, system, or social network can readily engage in meaningful communication (Hopkins, Spillane, Jakopovic, & Heaton, 2013). In contrast, the epistemic community construct places less significance on organizational boundaries, focusing instead on the way in which a shared cognitive framework among actors facilitates accurate and efficient exchange of knowledge within and across local work settings (Håkanson, 2007; Holzner, 1968).

This conception of theory also sheds light on the complexity of reforming the profession through investments in knowledge sharing. Consider, for example, efforts to integrate the Japanese system of Lesson Study into the American professional culture of teaching (Fernandez, 2002; Hiebert et al., 2002; Lewis & Tsuchida, 1998). Lesson Study is a highly touted model of knowledge sharing in which a group of teachers works over a period of weeks or months to research, plan, and implement a single lesson. The lesson is typically performed in front of an audience of other teachers and leaders who contribute to subsequent analysis and discussion. Publications from lesson study groups are often made accessible to a wide audience of education professionals (Stigler & Hiebert, 1999). The model has held much appeal in large part because of research depicting Lesson Study as a powerful mechanism for the development and transfer of instructional knowledge within the Japanese teaching profession.

But while Lesson Study may create a joint experience for teachers, its benefit is at least partially dependent on shared theoretical understandings about
teaching and learning that enable participants to use the experience to derive common meanings and generate new knowledge. Indeed, such common theoretical understandings may be part of what makes Lesson Study a potent system for knowledge sharing in Japan. Whether such common understandings exist in the United States is less certain.

**Code**

Codes are the symbolic means by which community members communicate with each other and their environments. Codes provide “language” that supports individuals in framing their experience, in communicating their experiences and observations among each other, and in collectively examining and refining understandings drawn from experience. For example, Goodwin’s (1994) classic depiction of the interaction between a senior archaeologist and a novice exemplifies how a specialized code transforms uncategorized information into “objects of knowledge” and, in doing so, “organize[s] apprehension of the world” (p. 608). Abbott (1988) makes a similar point in arguing that through the use of its specialized language, a profession transforms an empirical situation into a recognizable concept that is more amenable to diagnosis and treatment. Latour (1986), in his treatise on the role of inscription in the development of knowledge, notes that “no scientific discipline exists without first inventing a visual and written language which allows it to break with its confusing past” (p. 13).

An epistemic community’s code is also central to its capacity to articulate and codify new knowledge (a point to which we return later). The interplay between specialized language and shared theory enables organizational members to reflect on and codify experience in ways that enhance performance and build new knowledge (Zollo & Winter, 2002). Indeed, some researchers see the knowledge creation process as dependent on a suitable code by which individuals identify and explicate tacitly held understandings. As Håkanson (2007) explains, code interacts with theory and tools to “make possible the development of new models and new theory. New theory, in turn, may lead to the refinement of existing codes or the creation of new ones” (p. 73).

The education profession’s lack of a specialized code—by now a decades-old observation (e.g., Lortie, 1975)—undermines the capacity of the profession to support the type of generative discourse that could otherwise advance the field’s clinical knowledge base. There are, however, some notable exceptions to this. For example, Reading Recovery, which is among the most widely implemented and researched reading interventions of the last several decades, includes a highly detailed code for the assessment of student reading. Research has noted the subtle yet meaningful differences in the language Reading Recovery teachers use to frame their responses to student errors in comparison with other teachers (Pinnell et al., 1994). The shared code among Reading Recovery teachers is likely a key contributor to the highly consistent and effective practices among the eight thousand schools in which it is used,
and integral to the continuous refinement of Reading Recovery’s methods and tools (Bryk, 2009).

Tools
Tools include the artifacts used in practice that increase efficiency, perception, and memory and that aid in the codification, storage, and transmission of articulated knowledge (Håkanson, 2007). Examples include documents, maps, models, instruments, and prototypes that are as far ranging as the expert communities they serve. Scholarship in numerous academic traditions has explored the centrality of tools in communities of practice. For example, in her research into the role of objects in social life, anthropologist Knorr-Cetina (1999) develops the concept of “knowledge objects,” which she sees as of the basis for shared subjectivity and social integration. Similarly, in their seminal work on organizational learning, Cook and Yanow (1993) depict artifacts as a critical context for developing shared intersubjective meanings within organizations and the mechanism by which “organizations and groups transmit their values, beliefs and feelings to new and existing members” (p. 379). Star and Griesemer’s (1989) oft-cited notion of “boundary objects” illustrates the way in which material artifacts support the coordination of complex work across groups that would otherwise struggle to communicate.

Other scholars have ascribed an epistemic quality to tools, noting their role in the accumulation and transmission of knowledge. Science historian Rheinberger (1992) coined the phrase “epistemic things” to denote the way in which contested knowledge becomes temporarily “engraved” into a material space (p. 307). Likewise, Latour (1986) argues that “inscription” in the form of maps, models, diagrams, and texts is fundamental to the collective reasoning that characterizes discourse within expert communities: “Scientists start seeing something once they stop looking at nature and look exclusively and obsessively at prints and flat inscriptions” (p. 15). Finally, tools play a critical role in epistemic communities by enabling the transfer of knowledge across local worksites and by creating the basis for a common set of experiences among practitioners that facilitates collective reflection and further learning.

The importance of shared tools has informed analyses of a few exceptional educational systems, as well as ideas about knowledge building processes for the profession. For example, shared tools are central to the coordinated and coherent system of instruction that Lampert and colleagues (2011) describe in their account of an Italian language school in Rome: “Teachers were more likely to have seen a problem like the one a colleague was working on because they themselves had used the same materials when working to accomplish the same goals” (p. 1391). Likewise, Hiebert and colleagues (2002) conclude that a common curriculum is a “key enabler for a system that supports the building of a profession’s knowledge for teaching” in which “the problems that teachers encounter and the solutions provided by the creation of new knowledge
are more likely to be shared across locations and time” (p. 8). Levin’s (2010) analysis of a highly touted school reform initiative in Ontario also highlights the importance of materials and practices that became “pretty well universal” across the province (p. 45). In all these cases, instructional tools are depicted as central to the generation of common experiences, the development of shared subjectivity, and the locus of an incrementally growing knowledge base.

Knowledge and Its Creation Within Epistemic Communities

The interaction of theory, code, and tools fosters the development of new knowledge within epistemic communities. These knowledge creation processes involve a dynamic interplay between local and global communities of practice, as well as between the explicit and tacit knowledge that underlies effective performance.

The Role of Tacit Knowledge in an Epistemic Community

Tacit knowledge plays a critical role in an epistemic community by supporting the effective use of tools, the proper handling of ambiguous cases, and the cultivation of “performance” capabilities (e.g., engaging children in a story, persuading a jury) that are difficult to codify. Note, for example, that advances in information technology have not rendered obsolete the need for skilled librarians who possess the capability to use and adapt these technologies to the variable needs of clients. Likewise, Gawande’s (2010) popular depictions of medical practice illustrate the role of tacit knowledge in the performance of technical procedures such as threading a heart catheter. As Duguid (2005) writes in his analysis of organizational knowledge, “Codification is remarkably powerful, but its power is only released through the corresponding knowing how, which explains how we get to know and learn to do” (p. 114). Ball and Cohen (1999) make a similar point in regard to teaching, noting that “practice cannot be wholly equipped by some well-considered body of knowledge” (p. 10). An epistemic community can generate consistent and effective practice only to the extent that workplace environments support the development of the tacit knowledge that underlies the effective performance of complex tasks.

Tacit knowledge is important not only because it enables skilled performance, but also because it is shared among practitioners working in diverse contexts and is thus still a feature of the larger epistemic community. Threading a catheter requires a tacit sense of “touch and feel,” but it is still a capability that all surgeons who catheterize must develop. Goodwin’s (1994) depiction of a dialogue between archaeologists about where to delineate different layers of dirt also emphasizes the importance of shared tacit knowledge within a geographically dispersed community of practitioners:

The relevant unit for the analysis of the inter-subjectivity at issue here is thus not these individuals as isolated entities but archaeology as a profession, a commu-
nity of competent practitioners, most of whom have never met each other but nonetheless expect each other to be able to see and categorize the world in ways that are relevant to the work, tools, and artifacts that constitute their profession. (p. 615)

Finally, whereas organizational scholars have traditionally viewed the exchange of tacit knowledge as cumbersome and inefficient, tacit knowledge is readily exchanged within epistemic communities (Duguid, 2005; Håkanson, 2007, 2010). For example, in his analysis of knowledge generation within and across firms, Håkanson (2010) argues that “the ability of individuals to engage in knowledge transactions is primarily determined by their epistemic backgrounds, rather than by the degree of tacitness of the knowledge they hold” (p. 1805). In education, where codified knowledge is not extensive, the role of tacit knowledge looms large in the formation and functioning of epistemic communities.

The Role of Codified Knowledge in an Epistemic Community

Codified knowledge also plays a critical role in epistemic communities. One reason is that codified knowledge constitutes a great deal of what is common across diverse local contexts, typically in the form of tools. Once embedded in transferable artifacts, knowledge can cross distances and organizational boundaries with relative ease (Håkanson, 2007; Kogut & Zander, 1992). Moreover, documents, maps, models, heuristics, and other such representations can make complex social and physical phenomena amenable to argumentation, persuasion, and understanding. As argued by Latour (1986),

> It is not only because they look exclusively at maps, account books, drawings, legal texts and files, that cartographers, merchants, engineers, jurists and civil servants get the edge on all the others. It is because all these inscriptions can be superimposed, reshuffled, recombined, and summarized, and that totally new phenomena emerge, hidden from the other people from whom all these inscriptions have been exacted. (p. 29)

Codified knowledge also enables the coordination of complex work within an organization, because it makes it possible to “chunk, store and communicate technological knowledge” (Håkanson, 2007, p. 75; Kogut & Zander, 1992; Zollo & Winter, 2002). Peurach’s (2011) depiction of the way in which highly elaborated material resources support the coordination of instruction among different teachers and grades in the comprehensive school reform program Success for All is a good example.

Explicit and tacit knowledge are mutually constitutive. Locally developed tacit insights can potentially be codified, thereby enabling the spread of new knowledge across the epistemic community. The reverse is also true. As new codified knowledge is introduced into an epistemic community in the form of new tools, it creates opportunities for generating new tacit capabilities.
and insights derived from the experience of using the tools in practice. This point is captured by Cook and Brown’s (1999) notion of a “generative dance” between the social and physical world as well as by the “duality” that Wenger (1998) sees between “reification” and “participation” in which codified objects (e.g., the Constitution) generate collective interpretation and understanding (e.g., legal discourse). Likewise, scholars investigating the relationship between medical knowledge and medical practice have noted that “domain knowledge informs practice, and practice, in turn, shapes knowledge” (Patel et al., 1999, p. 76).

To remain viable over time, an epistemic community requires an ongoing codification process. Without continuous codification, practice and knowledge develop locally absent any mechanism for coordination across disparate worksites (Zollo & Winter, 2002). Gasson (2005), whose research focuses on collaboration across epistemic groups, argues that “to produce knowledge that is transferable to other contexts, know-how must be operationalized through shared language constructs, common work-practices, genres, and the use of shared artifacts in collaborative work” (para. 12). This is a well-known problem in education where the advances of a single school or department rarely inform teachers or other members of the occupation who are not working in close proximity.

The codification process also makes tacit knowledge amenable to scrutiny, thereby exposing common assumptions to a process of public debate and verification. The fact that knowledge is held tacitly does not mean that it is valid or effective, and examples of widespread yet ineffective practice are abundant in many occupations. This is, of course, true in teaching; for all the enthusiasm that professional communities of teachers continue to elicit among both scholars and school leaders, Hiebert and colleagues (2002) rightly warn that “teachers working together or a teacher working with his or her students might generate knowledge that turns out to undermine rather than improve teaching effectiveness” (p. 8). Indeed, some scholars see the public nature of the learning that results from the codification process as no less important than the resulting product (Zollo & Winter, 2002). Latour’s (1986) depiction of how the printing press advanced knowledge captures the point well:

The printing press does not add anything to the mind, to the scientific method, or to the brain. It simply conserves and spreads everything no matter how wrong, strange or wild . . . [but] no matter how inaccurate these traces might be at first, they will all become accurate just as a consequence of more mobilization and more immutability. (p. 11)

Codification, however, is a painstaking and resource-taxing activity that requires organizational investment. In most instances, expert practitioners have little incentive to codify that which they already can do, and local communities of practice can readily transfer knowledge via observation and dialogue.
Barriers to Epistemic Communities in Education

Is the teaching occupation, as conceptualized here, home to epistemic communities? The plethora of subspecialties (e.g., subject areas, grades, special education) within the occupation make this a complicated question to answer definitively. Nonetheless, whether one looks at the whole occupation or its major subspecialties, components of an epistemic community are apparent. The basic tools of practice—the textbook, worksheet, homework assignment—are seemingly ubiquitous. Likewise, the familiar patterns of teacher discourse in faculty lounges, at the copier, and around the mailboxes, though not typically concentrated on the finer points of instruction, can be interpreted as a type of code. And even if most instruction is not governed by research-validated theories of teaching and learning, basic rules of thumb are passed on from generation to generation of teachers.

But while teaching may have its version of theory, code, and tools, rarely do the three interact in ways that advance knowledge across the diverse members of the teaching occupation. Continuous improvement of instructional practice has been strikingly slow, and, as Dreeben (2005) comments, teaching “has remained remarkably unchanged in its technological repertoire” (p. 59; see also Cohen, 2011; Cuban, 1993). As discussed earlier, the occupation’s lack of a robust system of knowledge generation and use inhibits it from asserting a strong claim to exercise more control of its work (Dreeben, 2005; Glazer, 2005; Lortie, 1969, 1975).

What accounts for the lack of generative interaction among theory, code, and tools in education? There are multiple reasons, including the fact that schools are seldom organized in ways that support the collective development of tacit knowledge, that the mechanisms for codifying tacit knowledge are poorly developed, and that processes for coordinating among different epistemic communities within schools are limited. Consider, for example, the way in which the conventional egg crate organization of instruction in which teachers are structurally and intellectually isolated from one another in stand-alone classrooms limits the development of shared tacit knowledge; or how the lack of release time and resources for teachers inhibits efforts to develop and institutionalize building-wide curricula; or the way in which the absence of shared work arrangements detracts from efforts to coordinate work. But while there is not a shortage of structural obstacles that hamper the development of epistemic communities in education, we focus on one particular issue that rises above the rest in its importance: the isolation of educational tools from theory and code.

The Isolation of Educational Tools from Theory and Code

Although curricula, textbooks, assessments, lesson plans, and other tools of education are present throughout the teaching occupation, their content varies widely across states, districts, and schools. As Cohen (2011) notes, “Schools have had no common curriculum or curriculum frameworks, no com-
mon exams that were tied to the curricula, no common practices that were
grounded in the curricula, and no teacher education that focused on teach-
ing the curricula that students would study” (pp. 190–191). In this sense, what
is common across the occupation are the categories of tools (e.g., textbooks),
whereas the actual tools vary extensively.

The lack of common tools deprives the teaching occupation of what would
otherwise be a primary mechanism for maintaining cohesiveness across geo-
graphically diverse contexts. The models, records, and inscriptions that allow
for collective and cumulative analysis of an otherwise invisible “state,” “cor-
poration,” “culture,” or “economy,” and that integrate practitioners into their
respective epistemic communities, are far less available to the practitioner
communities that comprise education. The lack of common tools also pre-
cludes the development of a singular body of tacit knowledge among teach-
ers that, in other occupations, is derived from the shared experience of using
common tools. This, in turn, restricts opportunities for the codification of new
knowledge arising from practice. Even in those rare cases when local insights
are codified, the fact that they are not tied to a common curriculum or other
common tools limits their utility to the occupation.

The lack of common tools also constrains the development of new theory
instrumentalities and the articulation of theory is not unidirectional” (p. 70).
Theory development depends on access to representations of complex reality
“that cannot be obtained without the aid of dedicated instruments” (p. 70).
In other words, the accumulation of common experience, which depends on
common tools, provides the impetus for the development of new code that
can describe new phenomena. Latour (1986) writes that “the ‘great man’ is a
little man looking at a good map” (p. 26). Education, as a field, has developed
few shared maps that are subject to ongoing, collective debate and that embed
the collective experience of practice.

Educational Epistemic Communities: Success for All and America’s
Choice

While the obstacles that inhibit the development of educational epistemic
communities are substantial, they are not insurmountable. Our research into
the designs of three comprehensive school reform programs uncovered two
national networks—Success for All (SFA) and America’s Choice—that, in addi-
tion to supporting documented changes in teaching and learning (Correnti
& Rowan, 2007; Rowan, Correnti, Miller, & Camburn, 2009), exhibited many
of the critical features of epistemic communities. Indeed, it was our effort to
reconcile the findings from this study with the scholarship on occupational
control that led us to the literature on epistemic community.2

In previously published material we and our colleagues have presented
in-depth accounts of these organizations, their designs, and their effects on
teaching and learning. Here, however, we portray SFA and America’s Choice as ideal types. That is, we emphasize the programmatic characteristics salient to the epistemic community model in a way that intentionally preserves a degree of theoretical cohesiveness and that foregrounds those components essential to interpretation and analysis (Dillon, 2010). As such, it is the similarities between SFA and America’s Choice that are germane to this analysis. The differences in their designs for instruction, leadership, and school change, while central to a discussion of school improvement strategies, are in this case less important than their common characteristics. Indeed, the fact that the developers and program leaders of each network adopted different approaches to instruction, used different curricular materials, and established alternative school-level structures shows that the epistemic community construct does not imply a singular approach to teaching and learning but, instead, speaks to the type of organizational and social infrastructure needed to establish coherent systems of practice.

Finally, our account does not empirically validate the epistemic community construct or prove that these networks wholly adhere to the epistemic community model. It does, however, highlight particular features of networks that would otherwise go unnoticed or underappreciated and, in doing so, demonstrates the plausibility and utility of the epistemic community frame as a tool for analyzing systems of practice. In addition, we use one of these networks, SFA, to show that despite the considerable influence of markets and regulation, the generation and internalization of knowledge within the epistemic community can be a primary driver of practice, which is the hallmark of occupational control.

**Common Tools**

In both America’s Choice and Success for All, the basis for a generative interaction among theory, code, and tools began with a common set of tools grounded in the work of teaching and leadership. In America’s Choice, key tools included performance standards in reading, writing, and mathematics; a detailed set of “mini-lessons” on specific curricular topics (e.g., using metaphors, multiplying integers); “genre and author studies” that encompassed curriculum units based on the work of a single author or a literary genre; a system of leveled books that allowed teachers to match calibrated texts with the specific needs of readers; and a series of formative and summative assessments. SFA’s tools reflected its founders’ particular approach to instruction and improvement (a focus on cooperative learning) and, like America’s Choice, supported delivery of instructional content, assessment, grouping of students, and allocation of time. Common tools were also the foundation of SFA’s effort to ensure fidelity during the first stage of implementation, which program leaders saw as essential to maintaining integrity and effectiveness across its large network of schools (Peurach, 2011). Unlike typical U.S. schools, which
are characterized by an excessive diversity of tools, in these networks common-
ality, not variation, was the norm.\textsuperscript{4}

Moreover, in both SFA and America’s Choice, tools represented a context for
ongoing investigation into the practical work of teaching and learning. Each
network’s commitment to continuous revision (Cohen et al., 2014) ascribed
the tools with epistemic significance that resulted from successive iterations of
development and implementation. This cycle was informed by each organiza-
tion’s assiduous efforts to observe the use of tools in practice and their role
in supporting student learning. The position of these tools within a dynamic
system of knowledge generation recalls the role of materials in the Italian lan-
guage school described by Lampert and Graziani (2009) as a “place where
dynamic knowledge building and codified knowledge intersect” (p. 505). In
this sense, while tools like standards, mini-lessons, or quarterly assessments
might seem unremarkable in isolation, their role as integral components in an
interactive and dynamic system makes them different from the tools found in
typical U.S. schools that are not embedded in an integrated system of practice
and not continuously redeveloped in response to their use and effectiveness.

\textit{Shared Theory}

The practices and materials of both networks rested on their founders’ ideas
about teaching and learning. These ideas, though different from each other,
were grounded in the day-to-day work of practice and were intended to inform
practitioners’ decision-making processes and interpretations of experience. In
America’s Choice, fundamental understandings about teaching and learning
informed the overall instructional design, whereas more detailed theories of
teaching and learning were embedded in subject-specific tools and processes
(Cohen et al., 2014; Glazer, 2005). Theory in the Success for All network, also
research-based, informed the approach to early reading instruction, coopera-
tive learning, and the alignment of classroom instruction with student perfor-
mance (Peurach, 2011).

While each network relied on research in the development of the designs,
the meaning of theory encompassed more than scientifically validated prac-
tices. For both networks, rules of thumb intended to support collective sense
making and interpretation of experience included an array of shared under-
standings, such as recognizing that third graders mumble over words they can-
not read, texts which shift time frames reduce fluency, and whole-class lessons
should not exceed ten minutes (Glazer, 2005). In this way, the significance of
theory in these epistemic communities is not simply that they are “research-
based programs” but that each network strove to cultivate a common set of
assumptions among the teachers in their networks in ways that would frame
experience, guide problem solving, and support communication. We cannot
declare definitively the extent to which the thousands of teachers in these net-
works internalized these ideas, but we can assert that this attempt to organize
schools around a common set of ideas about teaching and learning is highly unusual in the context of U.S. education and consistent with the epistemic community model.

**Specialized Code**

Each network developed a code, specific to its own tools and practices, to support communication and documentation of practice within the network. In America’s Choice, the most vivid example involved the elaborate coding scheme used in assessing student reading. The method, adapted from the Reading Recovery system of “miscue analysis,” involved taking a precise record of a student’s reading performance in ways that denoted specific reading behaviors and strategies, such as substituting one word for another, omitting a word, and self-correcting (Cohen et al., 2014). We observed multiple instances in which this code enabled fine-grained communication among teachers around specific instructional problems, such as why some students routinely stumble on the word *can*, how fluency relates to syntax, and how to productively respond to a student’s tendency to only read the first half of a word (Glazer, 2005).

SFA’s specialized language also supported communication among teachers and leaders around specific dimensions of classroom and leadership practice, thereby enabling subtle modifications and improvements to practice (Peurach, 2011). For example, the network’s approach to reading acquisition combined five instructional methods: auditory segmenting, auditory blending, letter-sound correspondence, blending, and sound spelling. SFA defined these terms, taught teachers what they mean, and used them to explicate their designs of lessons, units, and other curriculum resources. The code also provided shared language for teachers to use when discussing the integration of students’ cooperative learning with the direct instruction of reading skills, in-the-moment diagnoses and remediation, and summary assessments. In sum, SFA’s unusually precise technical code not only reflected its highly elaborated instructional model but also provided the means for teachers to talk about and adapt the model.

**Interactions of Theory, Code, and Tools**

By bringing together common tools, shared theory, and a technical code, SFA and America’s Choice each established the basis for a knowledge-generating interplay between local and global communities of practice, as well as between tacit and explicit knowledge. The shared tools, theories, and codes served as the thread connecting classrooms and schools throughout each network. They also set the context for a common set of experiences among a widely dispersed community of practitioners. Each network also created school-based opportunities for practitioners to collectively develop the tacit dimensions of expertise needed to apply these tools in practice (Cohen et al., 2014).
An example of SFA’s knowledge-generating capacity can be found in the network’s continuous effort to codify the tacit insights of teachers and leaders. The development of the SFA design utilized external research but also heavily relied on network leaders continuously leveraging the (shared) experience of network teachers to inform revision and improvement (Datnow & Park, 2009; Peurach, 2011). This process of continuous knowledge generation from within the network was instrumental to SFA’s ability to replicate the model at scale while steadily increasing its effectiveness (Peurach & Glazer, 2012). As the program founders explain:

While there is a reliance on rigorous, quantitative research methods in informing model development, there is also a very strong commitment to learn from teacher practice. SFA seeks a constant interplay between teachers’ practice and research. The knowledge of SFA trainers, many of whom were former SFA teachers, is also integral to the development of the model and its implementation strategies. (Slavin, Madden, & Datnow, 2007)

The interaction of theory, code, and tools was also critical to SFA’s effort to support teachers’ transition from novice to expert practice. This process of shifting from reliance on codified routines to more adaptive practice was enabled by knowledge generated contextually within local SFA communities. Internal SFA documents defined the most advanced level of implementation as one in which “staff and community examine student achievement data on a continuous basis and engage in problem solving and decision-making processes aimed at improving implementation” (Success for All Foundation, 2002, pp. 1.6–1.8). This degree of problem solving and local knowledge generation, so rare in U.S. schools, could occur within SFA schools only to the extent that it was enabled by a dynamic epistemic community that created the basis for this type of joint work and generative discourse.

Interactions among theory, code, and tools enabled similar knowledge-creating processes in America’s Choice. We observed numerous cases in which the innovations and insights of individual teachers informed the design of formal tools that were then made available to teachers throughout the network. For example, when network leaders decided to develop detailed lesson plans for the first thirty days of school, their initial step was to utilize the experience of teachers whose students achieved at a consistently high level (Cohen et al., 2014). These teachers contributed their own lesson plans and in some cases became directly involved in the development process. In another instance, network leaders videotaped the subtle techniques that some teachers employed to sustain focused academic talk among children. These videotapes were integrated into the network’s professional development system, thereby informing network tools and theory.

These accounts underscore ways in which knowledge-building initiatives emerged from within the epistemic community that each organization
attempted to construct. Absent the foundation created by shared theory, codes, and tools, such efforts would have been far more difficult. In short, it was not the desire to build knowledge that set these networks apart, but that they each assembled an epistemic community that enabled them to do it.

America’s Choice and Success for All as Systems of Occupational Control

Do America’s Choice and Success for All represent systems of occupational control of instruction? To answer that question one must ask to what extent the networks’ systems of knowledge generation and use determined the organization and content of instruction within a complex constellation of market and bureaucratic controls. Consider SFA. On the one hand, the network has been vulnerable to shifts in both policy and markets and has had to make significant adjustments to its design to remain economically viable (Glazer & Peurach, 2012; Peurach, 2011). For example, the definition of effectiveness is largely determined by success on state assessments, which in turn bears on curriculum, pacing, and other dimensions of instruction. Moreover, as a non-government agency, SFA has constantly vied for schools’ patronage in an environment replete with competitors (Rowan, 2002).

On the other hand, there is persuasive evidence that despite these external pressures, the SFA network has largely operated as a system of occupational control. The primary warrant for this contention is that the design fundamentals for instruction and leadership in SFA have remained largely consistent for over twenty-five years. Indeed, while pressure on schools to raise test scores has increased substantially since SFA launched its network in 1988, the key staples of the design—a focus on cooperative learning, the cycle of instruction, and extensive tutoring—have remained constant.

Equally important, those changes to the program’s technical core that have occurred have been driven predominantly by the network’s own processes of continuous improvement. For example, when introducing important changes to the design for school leadership, network leaders drew on a panel of unusually successful SFA school leaders. The panel’s effort to articulate key leadership practices eventually led to the codification of knowledge that had previously been unevenly distributed and tacitly held among network principals (Peurach, 2011). The process eventually led to the development of new leadership tools that aimed to transform leadership practice across the network. This and other similar cases demonstrate the way in which practice in SFA schools was largely shaped by the articulation and generation of knowledge among practitioners that was reconciled with external research, adapted in light of changing policy expectations, and then communicated and vetted within the network.

That SFA and America’s Choice can be interpreted as systems of occupational control does not mean that they eliminated the influence of market
forces or bureaucratic regulation. All occupations and epistemic communities operate within a complex constellation of market and government forces. Consider as an analogue the American Medical Association: For all the power that it has wielded, medicine vies with formidable capitalist interests (e.g., insurance companies, pharmaceuticals) and powerful government forces (e.g., Medicare) for control of medical practice (Krause, 1999). In addition, professions compete fiercely with each other to gain control over contested jurisdictions of work. For example, tax lawyers and accountants contest with each other for control over the jurisdiction of “tax problems,” just as psychologists, social workers, and psychiatrists jockey for position within the “personal problems” jurisdiction (Abbott, 1988).

In sum, while meeting current policy demands and succeeding in the competitive school improvement market are critical to the network’s survival, SFA has blunted the force of regulation and market pressures by maintaining a system of practice that is informed by its fundamental ideas about teaching and learning, by coherent systems of curriculum, instruction, and assessment, and by the knowledge that is continuously generated from within its network of schools. Despite formidable pressures from regulatory and market forces, practice in SFA schools is still largely defined by an internally developed system of theory, code, and tools that is the foundation of occupational control.

Conclusion: The Logic and Leverage of Epistemic Communities

The logic and leverage of the epistemic community framework lies in its capacity to support analysis of alternative systems of practice and the way in which these systems support the development, transfer, and use of instructional knowledge. While the details, scope, and complexity of different systems could easily frustrate attempts to conduct meaningful comparisons, the epistemic community model focuses attention on the systemic dimensions critical to the production, use, and refinement of practical knowledge.

The power of this framework is also reflected in the comparative perspective it provides on the strengths and limitations of three alternative forms of control over instruction: bureaucratic control, market control, and occupational control. Toward demonstrating the power of this comparative perspective, we return to our contention that the two dominant policy approaches of the current era—the Common Core State Standards as a bureaucratic approach, and charter schools as a market approach—lack the knowledge-generating capacity of epistemic communities. As such, the success of either will depend on the development of epistemic communities, similar to the ones described here, which support the continuous development of instructional knowledge and capability.

The Common Core is arguably the most ambitious effort to regulate and standardize instructional practice on a large scale in the history of U.S. education. Proponents argue that it will encourage alignment among curricu-
lum materials, assessments, teacher education, and professional development and that this, in turn, will lead to a more coherent system of instructional guidance. But while increased coherence would be a welcome development, it is only within epistemic communities that the capabilities to use tools and techniques can be developed and refined. No materials, regardless of how coherent and aligned they may be, obviate the knowledge and skill needed to effectively deploy them in practice. Moreover, epistemic communities can transform otherwise static materials into “epistemic things” that embed the incremental accumulation of knowledge informed by practitioners’ collective experience. The Common Core sets a high bar for success and has the potential to create a more coherent educational environment, but it also reinforces the need to develop epistemic communities that support the continuous generation, use, and refinement of practical knowledge.

Charter school proponents argue that in leveraging the power of markets, charter schools will achieve a level of innovation and effectiveness rarely seen among traditional public schools. As our analysis implies, however, most charter schools lack the knowledge-generating power of epistemic communities. This is not an indictment of their will or talent. Absent dynamic hub organizations with the capacity to engage in long-term tool development, to codify the tacit insights of teachers and leaders, and to cultivate practitioners’ knowledge and skill, individual charter schools are no better equipped to systematically generate instructional knowledge than traditional schools. Increasing the number of individual charter schools may contribute to the emergence of some high-quality schools, but it will do little to advance the teaching occupation’s competence. Indeed, the task of developing and sustaining an epistemic community seems well beyond what can be reasonably expected from any single school.

Conversely, charter management organizations (CMOs) with complex designs for practice that are supported by highly capable hub organizations are better positioned to establish epistemic communities. Indeed, in our current research and that of our colleagues, we have encountered a few CMOs whose commitment to the design of shared tools, coupled with efforts to articulate foundational ideas and a code that expresses them, bear a striking resemblance to America’s Choice and Success for All. For example, the basis for an epistemic community is evident in Rosenberg’s (2012) discussion of the Achievement First Charter School network. Likewise, data on Aspire Public Schools that we have collected in an analysis of Tennessee’s Achievement School District point to a potentially potent system of theory, code, and tools that transform a network of schools into a dynamic epistemic community (Glazer et al., 2015).

The success of these CMOs (and other networks such as Reading Recovery) in establishing the infrastructure for epistemic community speaks to the potential of hybrid systems of governance that combine market, regulatory,
and occupational forms of control. In these types of arrangements, regulatory and market forces are not the predominant drivers of practice, but they establish incentives and resources that enable the development of dynamic epistemic communities. The epistemic community model can thus be understood as a blueprint for how geographically dispersed communities of practitioners, operating within a constellation of regulatory and market pressures, can collectively exert control on the core, technical work of teaching via the production and use of practical knowledge.

Notes

1. In discussions of this type, depictions of market, bureaucratic, and occupational control are ideal types— theoretical abstractions—that no more capture the empirical complexity of modern systems of work than “perfect competition” represents modern-day economies. In reality, markets, organizations, and occupations vie for control of professional work, resulting in a shifting balance in which each exerts influence in interaction with the others. Yet, just as perfect competition provides economists with a useful heuristic, so does the concept of occupational control aid in thinking about the organization of educational work.

2. This analysis of America’s Choice and Success for All draws from a multiyear comparative case study of three leading comprehensive school reforms. This study was embedded in a broader, multi-methods study. For more on the studies, their designs, and their findings, see Cohen et al. (2014); Correnti and Rowan (2007); Glazer (2009); Glazer and Peurach (2013); Peurach (2011); and Rowan, Correnti, Miller, & Camburn (2009). Success for All currently maintains a network of more than 1,000 schools in 40 states, and it has also operated schools in six countries. The organization recently received a $50 million grant under the federal Investing in Innovation program to support further scale-up of its network. America’s Choice was purchased by Pearson Publishing in 2010 and subsequently ceased to function as an active network. Prior to the sale, it worked with more than 2,000 schools in 38 states.

3. Previous research (Cohen et al., 2014) has documented a degree of “design convergence” among Success for All and America’s Choice that occurred over the course of a decade. While their theories of action and associated designs initially differed, the two models evolved in ways that greatly increased their degree of similarity. Our representation here of Success for All and America’s Choice aims to highlight and explain the significance of these similarities.

4. The third program in our study, Accelerated Schools, did not provide a common set of tools for teachers or leaders and produced no discernible change in teaching or learning (Rowan et al., 2009). Though the evidence does not allow for a causal link, the epistemic community frame leads to our interpretation that without a common set of tools, there was little possibility for the generative interaction of theory, code, and tools needed to continuously produce practical knowledge within the network.

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