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Situating Motivation

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This article describes a situative approach to studying motivation to learn in social contexts. We begin by contrasting this perspective to more prevalent psychological approaches to the study of motivation, describing epistemological and methodological differences that have constrained conversation between theoretical groups. We elaborate on issues of the unit of analysis, the conceptualization of contexts, and the role of identity as a central construct. Finally, we argue that the design of learning environments and interventions to change learning environments are informed by attention to the relationships among meanings, identities, and motives in context. We illustrate our argument with examples of design-based research and design-based implementation research focused on motivation to learn in children and adults.

Researchers from a broad range of theoretical perspectives investigate why people engage in learning activities and the extent and nature of that engagement. *Motives* and *goals* feature in anthropology, sociology, and the learning sciences, as well as in social, developmental, personality, and educational psychology. The perspectives taken are a function of the epistemological roots and practices of these different fields, leading to different questions, different methods, and different research aims, but are collectively concerned with understanding people's intentions, goals, motives, and needs. In this article, we focus on a situative approach to questions of motivation and learning, drawing on work in the learning sciences and anthropology.

Previously, we have attempted to prompt a conversation between motivation theorists who use more prevalent psychological theories[1] and situative theorists (Nolen & Ward, 2008; Nolen, Ward, & Horn, 2011) to foster an exchange of insights gained through the respective approaches. Others have taken turns in this conversation from a more psychological perspective (see, e.g., Zusho & Clayton, 2011). In this "turn," we describe our situative approach to motives and engagement and its potential contribution to the study of motives and engagement in educational psychology, setting it in relation to motivation theories and to situative perspectives on learning and engagement, with illustrative examples from our own and others' work. We describe how this approach enriches psychological understandings of these phenomena in social contexts and how researchers and educators might leverage these insights to support the development of engaging and effective learning environments.

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[1]By "prevalent psychological theories" we mean those theories that use the individual's cognitions and emotions as the primary variables, and the individual as the most common unit of analysis (e.g., achievement goal theory, self-determination theory, personal investment theory). Throughout this article, we refer to this group of theories as "psychological theories" for brevity.

EPISTEMOLOGICAL DIFFERENCES BETWEEN PSYCHOLOGICAL AND SITUATIVE APPROACHES

Epistemological differences complicate conversations between psychological and situative theorists, with different views on the nature of learning leading to important differences in research aims, methods, and evidence. Motivation theories seek to explain individuals' motives by investigating their individual thoughts, beliefs, and interpretations of contexts. "Motivation to learn" in this sense fits well with a cognitive definition of learning, where changes in conceptual understanding, strategies, and skills are largely a property of individuals (Plaut & Markus, 2005). A child who develops an interest in learning chess, for instance, can be understood in terms of personal beliefs that the game is worth learning. In contrast, a situative view integrates cognitive and interactional perspectives, with learning defined as a change in social practice (Greeno, 1998). To elaborate, social practice "is doing in a historical and social context that gives structure and meaning to what we do" (Wenger, 1998, p. 47). Social practices are the source of meaning in different settings and provide images of normative participation (Smagorinsky, Cook, & Johnson, 2003). A situative analysis of our aspiring chess player would more centrally narrate the social location of chess playing in the child's world—the opportunities it provides to spend time with community elders, the way it provides a comfortable activity in the neighborhood park—as a source of meaning and identity that come along with learning the game.

Whereas traditional psychology discovers norms through statistical modeling of variables in populations, a situative perspective insists that normative behavior, as a social construct, is best identified through observations and participant narratives of activities and their meanings. Because most chess players are male, with only 1% of Grand Masters identifying as female, the child's interest in chess is atypical if she is a girl. Given the profoundly different social meaning of chess playing for children of different genders, an account of a child's budding interest benefits from an account of the social meaning of this interest and includes the identity negotiations required to support sustained learning of chess. The account of this motivation to learn changes yet again as we layer in other details: Did this child live prior to the feminist movement? Does she come from a long line of chess prodigies? These contextual details shape her possibilities to identify and sustain her motivation to learn chess.

This way of uncovering norms through activity also illuminates links between individual development (ontogenesis) and societal changes (sociogenesis; Lemke, 2000). In this way, the situative commitment to embedding individual activity in social settings calls for different accounts of how people become motivated to engage (Hickey, 2003), accounts rooted in the ways that "social practices are organized to encourage and support engaged participation by members of communities and that are understood by individuals to support the continuing development of their personal identities" (Greeno, 1998, p. 11). Thus, "engaged participation" is not an accomplishment of an individual alone but rather involves the taking up of particular valued practices. Our aspiring chess player's interest may be better supported if she, in fact, comes from a chess-playing family. Messages in her environment would elevate the goal of playing chess, and presumably her everyday world would be rich in resources to support her motivation to learn. A situative account of motives and goals, then, has to explain why individuals take up practices in particular contexts as a function of their ongoing participation in social practices, acknowledging that the practices and individuals are changing simultaneously. If she goes on to become a female Grand Master, for instance, she may make chess playing a more "realistic" vocation for other girls, making progress on societal prejudices about who plays chess well.

The need to concurrently account for individuals' changes in practice and changes in the social world presses analysts to examine not only people's observable actions but also the discourses about and means of practice (e.g., representations or material tools) to understand the evolving meaning of a practice in the social system: Female Grand Master as an anomalous case or Female Grand Master as a commonplace. Thus situative accounts of *learning in context* often involve the thick description of anthropology (Geertz, 1973), allowing a consideration of local knowledge practices; material tools; interactions among participants; the nature of participation available to and desired by individuals; relation of those means and objects to individuals' personal and positional identities; and their affiliation to people, subject matter, and institutions (Greeno, 2006). As Lampert and her colleagues explained, social practice involves more than just talk: "It is how these elements work together in use that creates the will and skill to carry out a social practice" (Lampert, Boerst, & Graziani, 2011, p. 1368). To the extent that motivation theorists are interested in understanding students' engagement in learning activities, then, a situative view of learning complicates the picture considerably, broadening the notion of settings in which to study motivation and engagement as *emergent* phenomena. The same girl, with the same DNA and intellectual proclivities, would find her motivation to learn chess shaped in consequential ways in different arrangements of place, time, or family circumstances.

In the following sections, we explore the consequences of this epistemological shift for research on motivation. We first explain how a situative approach *alters the goals of research*. Then we examine a unit of analysis that characterizes situative research on motivation to learn, with a particular focus on the *role of identity as an organizing construct*. Finally, we argue that a situative perspective on motives must also *account for differences in the meaning of*

activity across persons-in-contexts. Along the way, we provide some analytic examples of how this lens not only changes our explanations for the relationship between the context and the individual in motivation to learn but also better informs attempts to design or modify learning environments to achieve particular educational goals. These examples draw on work in which we have explored contexts including literacy contexts in kindergarten and primary classrooms (Nolen, 2001, 2007a, 2008b), teacher education programs (Horn, Nolen, & Ward, 2013; Horn, Nolen, Ward, & Campbell, 2008; Nolen, Horn, Ward, & Childers, 2011; Nolen et al., 2009; Ward, Nolen, & Horn, 2011), high school math and social studies departments (Horn, 2005, 2007, 2010; Nolen, Horn, et al., 2011), and university–school partnerships (Nolen, Tierney, Goodell, Lee, & Abbott, 2014).

GOALS OF RESEARCH

The psychological study of motivation in formal and informal learning contexts has as a primary aim the creation of parsimonious, generalizable models that can explain what motivates learners, how, and why. These models identify a small number of important variables that can be measured or manipulated and their relationships to each other, including actions that operationalize the construct of motivation (e.g., expending effort, choosing to return to an activity over time, expressed positive affect). Examples of theoretical models include those of self-determination theory (SDT; Ryan & Deci, 2000) and its subtheories, Expectancy $\times$ Value Theory (Wigfield & Eccles, 2000), and the 3×2 model of achievement goals (Elliot, Murayama, & Pekrun, 2011). Proposals to integrate these theories into new models that account for more variance and to take into account cultural differences include recent formulations of personal investment theory (King & McInerney, 2014) and an integration of aspects of SDT with achievement goal theory (Vansteenkiste, Lens, Elliot, Soenens, & Mouratidis, 2014).

Models are generalizable to the extent that they satisfactorily explain actions that are taken as evidence of motivation across settings and groups. The "goodness" of psychological models of motivation is evidenced by the extent to which measured levels of the model's variables explain variance in outcome variables (as in structural equation modeling). To date, the variance explained by motivation models in outcomes of interest has been somewhat modest, suggesting that more remains to be explained—that the phenomena may be more complex than current models account for (see, e.g., Vansteenkiste et al., 2014). Other evidence of a model's "goodness" comes from experimental or intervention research: The model is "good" to the extent that manipulating one or more of the model's variables changes, in predicted ways, the behavior or self-reports taken to indicate levels of motivation. Laboratory or field experiments allow for the isolation of variables and "cleaner" tests of their several or collective impact. However, using the models to design interventions aimed at increasing or improving students' motivations to learn is more difficult, at least in part because of the complexity of classrooms, schools, and other learning contexts (see, e.g., Maehr & Midgley, 1996; Turner, Christensen, Kackar-Cam, Trucano, & Fulmer, 2014; Turner, Warzon, & Christensen, 2011).

A situative approach also aims to understand motives and engagement of people in formal and informal learning contexts. However, rather than the construction of generalizable models, the aims of this approach are (a) to account for both the dynamic complexity of motives of different individuals to learn (or not learn) within and across particular social contexts over time and (b) to identify useful patterns and dimensions in activity within contexts that can inform the more effective design or redesign of learning environments.

Triangulating across different forms of data provides evidence for the "goodness" of descriptive accounts. Examples of the kinds of data found in situative studies include observations of interactions in context, interviews and other self-reports, coordination of perspectives of different actors, engagement across settings, and changes in all of these across time (Boaler & Greeno, 2000; Horn, 2007, 2008; Maehr & Midgley, 1996; Nolen, 2001, 2007a, 2007b; Nolen, Horn, et al., 2011; Turner et al., 2014; Turner et al., 2011; Ward et al., 2011). Because situative theories of motivation are premised on the complexity of contexts, the mapping to learning design is less fraught. The method of design-based research often investigates the theories of motivation emerging from situative analyses of the design of learning environments. These theories are then tested and refined as researchers document how the designed environments support and inhibit different forms of learning (Hickey, 2011; Hickey & Jameson, 2012; Horn & Campbell, 2015; Nolen et al., 2014)

To illustrate, we briefly describe our study of novice teacher learning and motivation (Horn et al., 2013; Horn et al., 2008; Nolen, Horn, et al., 2011; Nolen et al., 2009; Ward et al., 2011). The research questions emerged from practical concerns with theoretical implications. As teacher educators, we were concerned with what some have called the "theory-practice gap" (Anagnostopoulos, Smith, & Basmadjian, 2007; Feiman-Nemser & Buchmann, 1985), in which research-based practices are promoted in university teacher education programs but not taken up by novice teachers. Early findings in our longitudinal study of novice teachers' motivations in learning to teach showed that novice teachers' often radically modified or abandoned the teaching practices most valued by the teacher education program. A psychological analysis of their motivations to learn did not satisfactorily explain this phenomenon.

Novices were motivated to learn *some* practices, but not others, even those promoted within the same course, making it difficult to understand how changes in the context (e.g., the motivational structure of the course) could lead to changes in motivation. Also, they were motivated to learn the same promoted practices to varying degrees (e.g., some deeply engaged and some learned surface characteristics), which seemed to depend on contextual needs to learn and individual beliefs, values, and identities. Furthermore, novices' motivations to learn promoted practices often seemed to shift over time and across contexts. When taken up, the practices themselves seemed to change with implementation. We needed an approach to motivation that took into account contextual differences, developmental differences, and individual differences in learners' motivation.

To understand what was happening, we took a situative perspective, treating novices as *learners-in-contexts*. We observed them interacting with others in all of their university teacher education classes and in their field placements, including student teaching; conducted multiple interviews with them, their instructors, field supervisors, and cooperating teachers; and then followed them into their first 2 years of professional teaching, conducting additional observations and interviews. We carefully documented individuals' changes over time, as well as the contexts in which they learned to teach, triangulating across multiple interpretations of the meanings around teaching practices: the novices', their colleagues' and mentors', and our own. Our data led us to reconsider novice teacher motivation in the context of the social dynamics of teacher education, both locally and more broadly. Although other work contributed to our situative perspective on motivation, it was during the conduct of this study that we more fully developed our joint perspective. Throughout this article, we draw from this data corpus and others to illustrate that perspective.

UNIT OF ANALYSIS: LEARNERS-IN-CONTEXT

Because a situative perspective moves from the study of *learners* and their motives to motives as "stretched across" learners and contexts (Hickey & Granade, 2004), it requires a different unit of analysis. The expanded unit of analysis becomes *learners-in-context*. Instead of examining our budding chess player as a girl motivated to learn chess, we would embed her in her context: She is a girl from a chess-playing family in the 1950s United States who is interested in learning the game. This shift is consequential because it opens up for examination issues of power and positionality, a critical move for urgent questions about the disenfranchisement of learners in different settings (e.g., Kurth, Anderson, & Palincsar, 2002). *Positionality* refers to people's social standing, which is informed by cultural norms valuing certain racial or ethnic groups, genders, professions, and ages in ways that influences individuals' status. Positionality helps us understand the social meaning of different motivations—the girl interested in chess versus the boy. In this way, a situative perspective reframes issues of engagement and disengagement in fundamental ways. For instance, a situative lens moves past deficit explanations common in lay explanations such as a "lack" of motivation. Similarly, by foregrounding meaning, designers need to go beyond setting up situations in which particular context variables align. In short, focusing on the co-constitutive nature of motivation and context leverages different analyses and opens new avenues for understanding issues involving power imbalances and inequality.

The Salience of Identity in Understanding Motives to Learn

Identity is an important construct for examining learners-in-contexts. By *identity*, we refer to both the self-understandings people develop about whatever they are learning and the understandings that are assigned to them through their social position (Holland, Lachicotte, Skinner, & Cain, 1998). Concepts constitutive of identity, whether they come from the individual or the world, are inherently social in origin (Gee, 2001; Hand & Gresalfi, 2015/this issue). Identity, as a construct, provides analytic purchase on how people arrive at self-understandings or get positioned differently in the world. The girl motivated to learn chess would have different issues in negotiating her identity as an aspiring chess player, depending on the particular time, place, and social position she found herself in. In other words, identities are always socially negotiated and conceived of in relation to others. Drawing on social theories of identity development in multiple contexts (Dreier, 2009, 2011; Holland et al., 1998; Nasir & Hand, 2008), a situative view recognizes that any category for individual identity has social origins (e.g., gender, race, a "math person," a "good teacher"), although it may be personally adopted, rejected, or assigned by others.

We illustrate the usefulness of identity to understand learners-in-context with an example from our situative analysis of novice teachers' motivations to learn. In our longitudinal 3-year, cross-setting ethnographic study of the motivations of novice teachers to take up particular practices, we studied how novice teachers made choices about what teaching practices to learn (and how well) as they moved across multiple learning contexts (i.e., their teacher education courses, their field placements, and their full-time paid work as teachers). We found that *identification* became an important process in explaining motivation to learn. By identification, we referred to ways that focal participants integrated contextual resources to understand their emerging sense of themselves as teachers (Horn et al., 2008). Novices recruited feedback from mentors, student responses to instruction, and departmental norms, among other resources, to understand their emerging "teacher

identities" in relation to their schools and departments and to motivate identification with or rejection of particular practices.

Identification had two consequences for motivation and learning. First, as might be expected, when teaching practices resonated with novices' extant identities (i.e., they saw them as valuable and feasible), they engaged more readily and deeply in learning them. Karl, for example, saw himself as a teacher dedicated to helping students "think for themselves." He identified with the instructional practice of Socratic Seminar,[2] learned at the university, in part because it was a tool consistent with the kind of teacher he aspired to be. Second, when teaching practices did not resonate with novices' extant identities—*but messages in the environment linked them to* desired *identities*—then novices overrode their initial concerns and persisted in learning them anyway. This second role of identification in motivating learning can be illustrated through Hilary, another novice social studies teacher. In our first interview with her, Hilary described herself and her interest in assessment class:

> Well, assessment, who likes assessment? [Laughs] I don't like the facts and figures and I don't like the data necessarily like—and they're foreign concepts to me, it was like learning a new language. . . . I'm sort of not a very detailed person, I'm a big picture person, so it was just frustrating. (Hilary, Interview 1)

In this account, Hilary's identity as a "big picture person" is at odds with the need to engage with "the facts and figures" that are a part of assessment. Elsewhere in our data, such stated conflict between participants' identities and the core teaching practices they were asked to learn in teacher education led to superficial engagement (e.g., completing related assignments without much commitment, overt expressions of skepticism outside of class). However, in Hilary's case, other identity resources led her to override her own apathy. As she told us later in the same interview:

> I knew it was something that I had to work through, I had to like—I had to stick with it, I had to work really hard at it, because I had to get it. I knew that it had a purpose. I didn't know what the purpose was but I knew it had a purpose. People kept telling me it had a purpose. [The instructor] said it a lot, like it's going to be important. I have friends who are teachers who've gone through the [teacher education] program, and they both have said that assessment is very, very important—it's an asset when you know how to assess students well.

Hilary's trust in the instructor and her friends motivated her engagement with these assessment practices that were otherwise in conflict with her identity. In our framework, her affiliation with these important people provided contextual resources for her desired identity—to be a good teacher—thus changing her motivation to learn.

SDT posits the importance of relatedness or attachment in internalizing extrinsic motives for learning to the self (Ryan & Deci, 2000). Although Hilary's relatedness to her teacher friends were clearly important, our analysis also takes into account that Hilary's notion of her teacher identity was also changed through these interactions with other teachers. Her commitment to learning assessment practices *despite* initially seeing them as "foreign" and incompatible with her broader sense of self ("not a very detailed person") is motivated by her desire to become a good teacher *along with* her evolving representations of what a "good teacher" is and does. Changes in the latter entail changes in the *meaning* of assessment practice in its relation to Hilary's view of her desired teacher-self, providing a motive to learn.

When psychological motivation theories have considered identity, they have generally focused on individuals' views of themselves, evolving over time into a more integrated and stable, single and decontextualized sense of self (Markus & Nurius, 1986). SDT, for example, describes the internalization of extrinsic motives to the self as an aspect of healthy development promoted by contexts that support the satisfaction of the three needs (competence, autonomy, relatedness; Ryan & Deci, 2000). Other theories have allowed for cultural variation in the "self-concept," including the importance of various aspects (e.g., perception of ability) or the extent to which the self is conceptualized as "relational" or "collective" (e.g., King & McInerney, 2014). A situative view of identity and its relationship to motivation goes beyond internalization of motives from the surrounding culture. It provides information useful in designing learning environments to support identification with a practice and so changing the individual's motive for learning it. For example, rather than merely attempting to persuade novice teachers of the value of various practices, we have developed new approaches to supporting their development of new conceptions of a "good teacher" identity through guided participation in teaching practice (see Horn & Campbell's, 2015, description of *mediated field experience* as one such approach).

Positional Identities and Access to Participation

Holland et al. (1998) described two dimensions of identity: narrative and positional. Narrative identities encompass the understandings individuals develop about themselves, whereas positional identities involve the understandings assigned to people through encounters in the social world, as people respond to social categories like race, class, and gender and make assumptions based upon them. Situative views of learning are especially useful at uncovering the

[2]A structured practice for engaging students in close reading and discussion of a text.

issues of social status and power dynamics implied in the construct of positional identities. In a variety of learning environments, positional identities are manifested at multiple time scales, often simultaneously, as learners' participation becomes constrained by stereotyped narratives about race (Nasir, 2011), academic tracking structures (Oakes & Lipton, 1990), or interactional positioning in classroom discourse (Wortham, 2006, 2008). Societal expectations for who is likely to become a scientist or engineer, for example, may influence teachers to expect and encourage greater interest from White or Asian American boys in math and science courses more than from other students. This multilevel social organization can result in learners with greater or less access to learning activities, resulting in patterns of dominance, entitlement, nonparticipation, or marginalization that are more deeply rooted in the social world than in anything intrinsic to the learners themselves. The resulting identities, rooted in social positioning in particular contexts, can contribute to students' narrative sense of themselves across contexts. As McCaslin (2009) noted, "Everyday struggles, strivings, and negotiations can solidify into dispositions toward school and typical or 'characteristic' adaptations of classroom tasks" (p. 143). As these patterns become seen as typical by powerful others (teachers, administrators), students attain identities as "unmotivated," "disengaged," or even "oppositional" (Hand, 2010).

Nonetheless, learning contexts can afford multiple opportunities for participation in valued practices and thus offer ways "into" central identities in a community of practice (Nolen, 2007a; Nolen, Ward, et al., 2011; Wenger, 1998). Indeed, a motive for "belonging" has been noted by many psychological theorists (e.g., Furrer & Skinner, 2003; Martin & Dowson, 2009). The shift of the situative lens is subtle but consequential, as this perspective considers engagement (or disengagement) in a context as inseparable from participants' identities within that context. In the earlier example from our novice teacher study, Hilary's motive to learn and use promoted assessment strategies was seen as necessary to her becoming a "good teacher," a socially constructed identity embedded in particular contexts that reflected certain values.

Earlier work (Nolen, 2007a, 2007b) described how different identities were afforded to young students who had been categorized as struggling readers and writers in different classrooms. In classrooms where literacy activities were performed primarily for the teacher and where competent performance was rather narrowly defined, differences in student skill led to different identities within the classroom (e.g., "struggling reader" or "good writer") and unequal opportunities for meaningful participation. The teacher took up students' bids for participation in reading and writing only in cases where the contribution fit the particular targeted skill (e.g., identifying the topic sentence in a paragraph). Bids for other kinds of potentially legitimate participation (e.g., connecting the topic to personal experience, elaborating on information in the paragraph) were discouraged. As these interaction patterns became norms in the classroom, students whose present abilities or interests did not match targeted activities began to disengage more generally from literacy activities. However, in classrooms where reading and writing were seen as social acts of central importance to the classroom community, students' different forms of engagement could be positioned as competent when they contributed ideas, invented characters, shared interesting information, and the like. For students in these classrooms, participating in literacy activities was both possible and provided a way into central membership in the classroom community. We argue, with others, that such opportunities provide a powerful motive for engagement along with the chance to identify with particular disciplines (see also Gresalfi, Martin, Hand, & Greeno, 2008, for a similar example in mathematics classrooms).

The analytic shift toward learners-in-context leads situative theorists to view motives, identities, and learning as irreducibly co-constituted. Because learners' identities shape the nature of their motivation and engagement, and because these identities come about in negotiation with the social world, a comprehensive situative account of learning and motivation must account for these relationships.

CONTEXT AND THE INDIVIDUAL

The implications for understanding individual engagement via *learners-in-context* extend beyond issues of research design and data collection. *This extended unit of analysis entails a major ontological shift in the understanding of context.* Traditional psychological research uses variable-centered models to explore the role of context in explaining motives and engagement, an ontology that keeps individuals separate from (albeit operated on by) the world. In this way, most mainstream theories of motivation deal separately with the person and the context, including a role for context as represented by variables acting on individuals and (sometimes) being acted upon by them (Bandura, 2006). In SDT, for example, context plays an important role as a place in which individuals' needs are satisfied or thwarted (Ryan & Deci, 2000). In SDT research, contexts are described or manipulated to be autonomy supportive, competence supportive, or relatedness supportive, and the impacts of need-supportive contexts on individual motivation and well-being are studied. In achievement goal approaches, including achievement goal theory (e.g., Duda, Papaioannou, Appleton, Quested, & Krommidas, 2014; Gilbert et al., 2014; Meece, 1991; Turner et al., 2002; Wentzel, 1996) and personal investment theory (King & McInerney, 2014), contexts are important as socializing influences or facilitating conditions, promoting certain kinds of achievement goals (usually represented by mastery goals and performance goals) and influencing individuals to orient

themselves and their activity toward those goals or to avoid them.

These descriptions posit the influence of context variables on student motivation generally. The motivational analysis of the Purdue Math project (Nicholls, Cobb, Wood, Yackel, & Patashnick, 1990) provides one example of this approach. The Purdue Math project involved researchers and teachers collaborating to develop practices for primary math instruction based on principles of constructivism. The researchers' interest included an examination of how much extensive whole-group discussions that focused on understanding mathematics increased children's task orientation (in which one's goal is to increase understanding or mastery) rather than ego orientation (in which one's goal is to demonstrate superior ability) for mathematics learning. Children in the project classroom indeed showed higher levels of task orientation and lower levels of ego orientation, compared to the five other second-grade classrooms at the same school, with aggregate scores on motivational questionnaires as the outcome measure.

A variable-centric characterization of the context as emphasizing mastery or understanding gives the general prediction that students would become more task oriented. But looking at changes in the aggregate level of motivational orientations across individuals does not help us understand *how* these changes in individual goals were related to the changes in knowledge practices that were the focus of the design. Using learners-in-context as the unit of analysis, we might understand changes in engagement in relation to the negotiated changes in the nature and meaning of participating in mathematical activity.

Although the comparison classrooms were essentially "business as usual" and not well described in Nicholls et al. (1990), other accounts provide a more complex account of project classrooms as activity systems (Cobb, Yackel, & Wood, 1989; Yackel & Cobb, 1996; Yackel, Cobb, & Wood, 1998). The changes in the project classroom were not only in children's motivational orientation or even in their ability to solve math problems but rather in the nature of what counted as mathematical activity, the role of collaboration, and children's access to positions as "mathematicians." In an account of the emotions accompanying acts of problem solving, Cobb et al. (1989) described changes in the meaning of practices like "answer telling" and collaboration. At the beginning of the school year, "knowing mathematics" was equated to "knowing the correct answer." "Helping" or collaboration was telling someone the answer to a problem, without reference to how it was solved or whether it made mathematical sense. This positioned some children as "knowers" and others as "receivers" of knowledge, with little support for receivers to become knowers. In our situative view, these descriptions link forms of participation with kinds of mathematical identities available to learners. By midyear, "sensemaking" was seen as the predominant activity in math class. When a child persisted in trying to tell others the answer, children appealed to the teacher to "make him stop!" "Knowing mathematics" had been redefined in practice as communally constructed understanding rather than answer telling or speed of computation, and answer telling came to be seen as interfering with (taking away access to) understanding-construction. With this shift in social practice, new mathematical identities became available, allowing previously marginalized students (e.g., students who may not know the correct answer but have a good sense-making question) to participate productively in the classroom.

The effects of the intervention were described as an internal change in goals and beliefs: "Thus, the extensive whole-class discussions in the target class were expected to . . . promote task orientation and a belief that to do well in mathematics one must try to make sense of it" (Nicholls et al., 1990, p. 112). As our analytic narrative suggests, the situative perspective would view this orientation as embedded in the social practice of this classroom—distributed across activities, discourses, and narratives,—rather than merely a residue in the heads of individual students. In this way, the changing motivations to learn math became inextricably intertwined with the normative knowledge practices in that setting.

In another example of the tight bundling of identities, motives, and contexts, Horn (2008) conducted a situative study of *turnarounds*— students who performed better than expected in their 1st-year college preparatory mathematics classes—by following their course-taking decisions over their high school careers in two carefully documented high school mathematics departments. She found that, for many of these students, the contexts and identity resources mattered more than their prior mathematical achievement in sustaining their initial engagement and success. The departments' identity resources—most crucially how teachers' framed academic setbacks and the kinds of mathematical competence supported in the classroom—shaped students' decisions to persist or withdraw from challenging courses. These analyses provide critical information about potentially malleable contextual features that could inform attempts to create broader and sustained engagement in learning environments.

Most psychological theorists have been attentive to the extent that context can shape motivations to learn. King and McInerney (2014) characterized psychological approaches as positing motivational variables that fit within three dimensions: sense of self, goals, and facilitating conditions (context). A situative perspective, however, claims that the first two facets of this framework are too deeply embedded in the third to be parceled out analytically. In a situative perspective, a person's sense of self and perceived goals are tightly bound in the cultural systems that constitute facilitating conditions. As our reinterpretation of the Purdue Math data illustrates, the situative lens highlights how changes in the classroom activity system (including the behavior and discourse of individual students) could

inform those designing engaging learning environments, by revealing how changes—and meanings—got negotiated by teacher and students over time (see also Gresalfi, 2009; Turner et al., 2014).

Situative analyses of context provide an opportunity to move beyond examining "intrinsic motivation" or "mastery orientation" to focus on the affordances of particular contexts for supporting specific *kinds* of engagement. Engle and Conant (2002), for example, proposed dimensions of contexts that support what they call Productive Disciplinary Engagement, engagement in using the material, linguistic, and conceptual tools of the discipline to "get somewhere" or make progress over time (see also Engle, 2012). They identify four characteristics of such contexts: encouraging the *problematizing* of content, granting *authority* to tackle those problems and the *resources* to do so, while holding learners *accountable* to their peers, to the disciplinary community, and (in science and engineering learning environments) to nature (Ford, 2008). Although features like *authority* are similar in some ways to what psychological theories have called *autonomy* or *choice*, the difference in Engle and Conant's description is the need to balance the tension between authority and accountability. Too much authority and too little accountability leads students away from participation in the discipline.

An example comes from our ongoing design-based implementation research (DBIR) study in a high school project-based environmental science course. Tasked with creating a sustainable farm within a farming community with varying pest control strategies, a student pair designed an organic farm that existed in a giant plastic bubble, allowing the "farmers" to avoid conflict with neighboring farms using chemical pest controls that would contaminate their farm. Students were engaged in the task, but not in disciplinary thinking, because their solution ignored economic and environmental constraints on sustainability. Subsequent modifications of the task in the next design cycle of our DBIR increased accountability by reemphasizing economic constraints and using physical modeling to increase accountability to nature while retaining student authorship in creating sustainable solutions. By balancing authority and accountability (along with problematizing and resources), this design move supported student engagement in disciplinary thinking.

Engagement in Multiple Contexts

Our view of individual motives focuses on the knowledge practices and valued outcomes of activity systems. Any single system, of course, is embedded in a larger system of intermingled contexts (see, e.g., Nespor, 1997). Developmental theorists (e.g., Bronfenbrenner, 1993; Rogoff, 1995) have cast the individual as existing at the center of different social contexts and have argued for seeing individual development as embedded in layers (e.g., classroom in school in district in state, or family in neighborhood in city in region). Although some researchers have considered layers of context in relation to individual motivation (see, e.g., Elliott, Hufton, Willis, & Illushin, 2005), the mechanisms of interactions across contexts have not been well developed in variable-focused models of motivation (King & McInerney, 2014; Zusho & Clayton, 2011).

The situative shift changes what is foregrounded and what is backgrounded in any given analysis. The same context may matter differently to individuals who necessarily have different positional identities within it (e.g., a woman in a doctoral mathematics seminar vs. a man; an immigrant child in school vs. a native-born child). Accounting for "context" as a generalizable set of variables that influence cognitions or emotions in a similar way across settings and individuals reduces this source of variation to differences in individual interpretation. Although it may seem that these examples illustrate the sufficiency of identity variables in explaining positionality, salience shifts with individual biographies and at different historical moments, leading us back to thick description. For instance, a woman's positional identity in a doctoral mathematics seminar may differ if the year is 1900 or if she is a second-generation mathematical researcher in the present day. For a situative researcher, the details of individual identities are too complex and intersecting for variables alone to capture. Instead, a situative perspective attunes us to individuals' social position and the available forms of participation and related meanings that influence learning.

To state this another way, the situative shift to analyzing learners-in-context not only reimagines the relationship between people and contexts but reworks the very notion of context itself. Context—and, importantly, the meaning making it supports—cannot adequately be characterized through analyses of individual variables. The layers of context that influence individual identity and learning are not simply nested like Russian dolls; instead, they are interwoven like a cloth, with threads that may strain more or less in different situations, which begs attention to individuals' meaning making and thick descriptions of the different settings in which individuals participate. For this reason, rather than from an a priori analysis of contextual layers and their influence, situative researchers start with individual subjectivities and trace outwards. For example, Hedegaard (2012) employed a situative perspective when she described motivation as dynamics between the child, his or her positionality and opportunities in specific situations, within institutions and their value systems. She states: "To understand how emotions and motives related to values become personal, one must conceptualise how values that have developed historically in different institutional practices also exist as demands on persons participating in these practices" (p. 17). The emphasis on sociohistorical analyses and related values, which supports an examination of meaning, distinguishes this notion of context from a more

variable-centered one. She goes on to describe approaches to understanding a child's motives both from his or her own perspective and as embedded within the histories of ongoing sociohistorical contexts.

Because of its attention to individual subjectivities, critiques of a situative approach to motivation have cast it as "relativistic" (e.g., Zusho & Clayton, 2011), so deeply focused on the particulars of a single context as to become not "generalizable." This characterization ignores that much of this work focuses on identifying generalizable patterns in the relationships between motives and participation of multiple individuals within and across activity settings and over time. What is generalizable is not relationships between variables, which cross-cultural studies show to differ in any case (King & McInerney, 2014). Instead, a situative view reconciles the tension of attending to individual subjectivities by building general theories about social processes. The attention to subjectivities to understand social meaning construction has a long history with a number of critical analysts (e.g., Giroux, 1983; Haraway, 1988). Consistent with ethnomethodological perspectives, it is the overall processes of motivation in activity over time, along with regularities in the salient dimensions of those activity systems, that we conjecture to be generalizable across situations.

There are a number of published examples of this type of research into engagement (e.g., Gresalfi, 2009; Jurow, 2005). Nasir and her colleagues studied student engagement (Nasir, 2011; Nasir & Cooks, 2009; Nasir & Hand, 2008) using ethnographic methods including observations of interactions and participant interviews, observing the same students across different contexts and different students within the same contexts. Their careful analyses of the affordances and constraints for engagement and the development of practice-linked identities in different contexts led to the development of useful conceptual and analytical tools. They identified three dimensions of social contexts: access to the domain, integral roles in the group's activity, and opportunities for self-expression within the practice, demonstrating their usefulness in explaining engagement in school and out-of-school contexts. These generalizations have since been taken up by other researchers studying engagement (Johri & Olds, 2011; Schademan, 2011; Thompson, 2014).

Our own work has taken into account both the immediate context of activity and its relationship to other contexts in which it is embedded or across which individuals move in developing their motives for particular practices over time (Horn, 2008; Nolen, Ward, et al., 2011; Nolen et al., 2009). For instance, in our study of novice teachers, as we illustrated through the example of Hilary, we found that their motives to learn and use particular assessment tools (rubrics, tests, grades) were shaped by how those tools fit with the activity of the different contexts in which they taught, their own positionality within those contexts (e.g., 1st-year teacher), and their own views of the value and feasibility of the practices in which those tools were embedded (Nolen, Ward, et al., 2011).

We illustrate this point further through Gemma, another novice teacher in our study of learning to teach (Horn et al., 2008; Nolen, Ward, et al., 2011; Nolen et al., 2009). Like others in our study, Gemma's motives to take up promoted teaching strategies changed as she moved from the university to student teaching to professional teaching. Gemma had been a "super-involved, super motivated student" in high school, and her primary concern in becoming a teacher was to connect well with students. As a student teacher, she demonstrated her ability to do so. In her teacher education coursework, she took a practical stance, performing well on assignments but confiding in an interview that not everything she learned in teacher preparation would be useful in the real world, dismissing certain theoretical ideas as "foo foo" or irrelevant. In addition, she found the assessment practices promoted in teacher education to be "unrealistic" because of the time they required. In an interview during her internship she told us:

> I will never sit and plan [assessments] like I did for that class. There's no — I would have no life outside of school. I would never give any sort of tests or projects because the amount of work that went into it, that's what that class taught me, that the amount of work that goes into assessing is like who would ever assess anything? . . . I could never — the amount of time that we all spent on that class I would never do that ever again. (Gemma, Interview 2b)

These views persisted during her student teaching, where her identity as a student teacher was temporary, and her actions were a means to the end of completing certification. Gemma's case is interesting, however, because when she "changed contexts" after graduating from her teacher education program, she was hired by the same department in which she had student taught. Changes in her motives, then, were not attributable to moving into a new activity system with new or different valued practices but instead are best understood in relation to changes in Gemma's positional identity within the ongoing history of the activity system.

Once she was hired by that department as a full-time teacher, Gemma's investment in learning to use assessment tools changed. She wanted to develop an identity as a member the community of practice that existed in her department (the *identification* process we described earlier), and spending time developing assessments and scoring rubrics was valued practice in that community. At the same time, her position in the activity system changed, with several teachers taking on mentoring roles and apprenticing Gemma to the departments' assessment practices. Taking up these practices became a route to central membership in

the department, something Gemma (and most of the other novice teachers) desired. Eventually, she began to avow the utility of these "labor-intensive" practices for her own teaching.

We can imagine a variable-centered explanation of Gemma's changing motivation to use more labor-intensive forms of assessment. SDT, for example, might suggest that Gemma internalized the initially externally regulated motives for using these practices until they became central to her identity, and this was facilitated by her relatedness with the other teachers in her department. If this were the case, however, we might have expected a more gradual shift starting during student teaching and continuing after she was hired. In both phases, Gemma worked with the same teachers who participated in the same practices. However, we see her shift in position from student teacher to full-time teacher as fundamental to her shift in motives in the activity system that constituted teaching in that department.

In both the examples of the turnaround students and Gemma, the relevant contexts went beyond particular classrooms to the departments, schools, parent communities, districts, and national assessment programs within which they were embedded. Contexts provided narrative resources for making sense of activities and events—*failing a class* versus *needing to strengthen student skills, working too hard on "foo foo" rubric development* versus *being a good teacher*. In this way, contexts did not only support or constrain learners' motivation to either persist in mathematics or use prohibitively labor intensive assessment tools but were the very milieu that endowed these particular acts with meaning, informing learners' own views of their identity and reasons for engagement.

MEANINGS, IDENTITIES, AND THE DESIGN OF LEARNING ENVIRONMENTS

As we have discussed, activities themselves take on particular meanings in social context, meanings that evolve through participation of members and interaction with other contexts. We gave the example of how the meaning of "answer telling" in second-grade mathematics lessons changed with an intervention that promoted different mathematical practices focused on co-construction of understanding (Cobb et al., 1989). This analysis, in turn, provided additional insight into the process that may have led to change in individual children's motivational orientations or theories. Understanding "amotivation" or "motivation" to learn depends, in part, on knowing the meanings of learners' actions in context, the relationship between those meanings and learners' identities, and how meanings are negotiated among participants in a context (Hedegaard, 2012; Wenger, 1998).

Understanding these social processes and their relevance to motivation is important in the design of learning environments, or in interventions to change existing environments. In an implementation study, Turner et al. (2014) investigated how teachers did or did not "take up" practices promoted in a motivation-related intervention by focusing primarily on classroom interaction data. Teachers were presented with principles based on motivation theory, meeting with the research team periodically to discuss their understanding and implementation of promoted strategies (supporting autonomy, belongingness and competence, and creating opportunities for meaningful learning).[3] By conceptualizing "teacher take-up" as happening within a dynamic system, rather than in teachers' heads, Turner and colleagues took what we would characterize as a situative turn. The research team analyzed the relationship, over a period of 3 years, between teachers' specific attempts to employ strategies in the classroom and students' responses to them, along with student bids and teacher responses. Using "state-space grids" as a way to model changes in the patterns of interaction over time, the researchers saw the push–pull among members of each classroom that led to changes in the engaged activity of the classroom. Again, patterns were compared across teachers and across contexts to identify regularities related to both practice and student engagement. Their analysis has important implications for the design of teacher-conducted motivational interventions that shed light on some difficulties noted in previous attempts (see, e.g., Maehr & Midgley's fascinating 1996 account of a multiyear DBIR-like study to increase the mastery-focus of whole schools). Taking implementation of a motivational intervention to be solely or even largely a matter of the teacher's understanding or willingness to implement it ignores the important roles of students, other teachers, and the organization (Penuel, Fishman, Cheng, & Sabelli, 2011).

As we have described, the negotiation of meaning across contexts was the focus of our longitudinal study of novice teachers' motivation to learn specific teaching practices (Horn et al., 2008; Nolen, Ward, et al., 2011; Nolen et al., 2009). We found a number of previously documented issues in the TEP that might explain why, as a social context, it challenged the novices' motives to learn. As other research on teacher education has found, novice teachers' learning was confronted by three sources of ambiguity and challenge. First, the TEP pressed novices to develop ambitious forms of practice, setting them to work against well-established norms in many schools (Cochran-Smith, 1991). This put novices in the complex position of negotiating the

[3]Teachers in the study found providing opportunities for "meaningful learning" to be one of the most difficult parts of the intervention. Perhaps this is because, in schools, the *reasons* for learning material are taken for granted by teachers and administrators, while students often find them opaque.

values of the TEP with the (often contrary) values of the workplace (Feiman-Nemser & Buchmann, 1985). Second, even in the most thoughtful and intentional teacher education settings, a common approach to teaching teachers is what has been called an *acquire–apply* pedagogy. That is, formal coursework is viewed as the primary site of acquiring a foundation for practice, and school placements are seen as places to apply that learning (Zeichner, 2010). The disjuncture in values between coursework and school placements combined with the underfacilitated application of TEP practices in classrooms led novices to radically modify or abandon some of the most challenging teaching practices introduced in TEP, particularly the most highly interactive ones (Horn, 2008). Finally, also related to the acquire–apply pedagogy, TEPs commonly devalue experienced teachers' knowledge, because the university gets privileged, whereas practitioner knowledge too often gets dismissed as unimportant or irrelevant (Feiman-Nemser, 1998), leading novice teachers to disdain what they are trying to become. These insights led to a design experiment (Cobb, Confrey, diSessa, Lehrer, & Schauble, 2003; Penuel et al., 2011) that worked to deliberately reorganize these features of the TEP, with the aim of shifting novices' motivations to learn. We did so by reorganizing the core teaching methods course as a *mediated field experience* (MFE; Campbell, 2012; Horn & Campbell, 2015). Briefly, the MFE addressed the three motivational concerns just outlined by (a) partnering with teachers working toward the same forms of ambitious pedagogies promoted in the TEP, (b) having novice teachers and university instructors observing and debriefing observations with partner teachers to uncover the complex thinking that informs their moment-to-moment instructional decisions to highlight the intellectual work of teaching, while (c) legitimating their knowledge. This mediated, negotiated learning led novice teachers to reconstruct their notions of what it meant to be a "good math teacher" as well as challenging previously held deficit views of students in urban schools. By extending the formal learning environment of the university to partner classrooms, the MFE aimed to reduce the gaps between coursework and the field, along with related identity conflicts for novice teachers. The partner teachers' investment in the promoted practices of the TEP helped them identify with these, signaling that ambitious practices *were* authentic and not, as Gemma might say, "foo foo." These highly interactive practices, dependent on the particular input of students, pushed novices beyond images of good teaching as being a good "explainer" and toward the importance of understanding students and the strengths they bring to mathematics.

After 6 years, we repeatedly found that novices who went through the MFE had different motives to learn the kinds of teaching practices promoted throughout the TEP than those who had gone through the traditionally structured methods course. For instance, Horn and Campbell (2015) described cases of novice teacher learning in foundational courses facilitated by the MFE structure in the methods course. Although novice mathematics teachers may not see multicultural education as relevant to their identities as "good math teachers" (because math is "culture free"), novices' conceptions of good math teaching changed through the MFE experience. For example, one novice teacher, "Hannah," gained insight into the ways students' cultural styles clouded her assessment of student thinking, noting, "I wonder if my biases about 'appropriate' student behavior limit my ability to recognize all the times when students are doing math." By recognizing her own bias, Hannah found different motivation to learn about the ways her own bias might shape her judgment in teaching, integrating what she in her multicultural education class with the particular practices she observed in the MFE.

SUMMARY

We have argued that moving from a psychological to a situative perspective on motives and engagement requires epistemological (and related ontological) shifts. Because a situative view extends our unit of analysis from individuals to individuals-in-context, the result for motivation theories is a view of motives as distributed across persons and contexts. Likewise, individuals are "engaged" relative to social practices and positions (along with their local meanings) available in those contexts. The expanded unit of analysis reflects the view that individuals' activity, identities, and motives arise through participation in social context and can be understood by considering them as mutually constitutive. This unit of analysis requires different ways of thinking about both *individuals* and *contexts*. Just as the idea of an essential, context-free individual becomes an oversimplification, so does the characterization of contexts as a collection of variables measured by aggregating individual perceptions. These ontological differences, in turn, require methods that can capture the embeddedness, power, and complexity of social contexts.

We further argued that socially constructed identities, both narrative and positional, are particularly salient in explanations of individuals' engagement (or disengagement) in learning. We drew on our own and others' data to show how motives are linked to desired identities under construction in particular contexts. Learning involves engaging the tools, social practices, and available identities of a community (classroom, school department, "college-bound students"), supporting (or not supporting) membership in that community. As individuals participate in social contexts, they negotiate their participation with the ongoing practice, narrating themselves and being positioned by others to have more or less access to central activities. In this way, a situative perspective provides tools to

understand how motives and engagement relate to privilege and marginalization, power and position.

Finally, we described how analyses of the meaning of activities of learners-in-context can support the design of learning environments that support student engagement. By attending to the social processes of motivation, we can design amidst complex learning environments in ways that support productive learning. Because a situative perspective is premised on the particularity of different contexts, this does not inhibit these endeavors but instead becomes a feature of this work (see Hall & Jurow, 2015/this issue).

In the end, we have arrived at the following conclusion. What a situative perspective lacks in generalizability in identifying variables it makes up for in the acceptance of complexity, the overturning of statistically modeled developmental norms that often lead to bias, the critical examination of power and marginalization in learning settings, and conceptual tools for learning design. We welcome others to continue the conversation.

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