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Conceptualizing Research–Practice Partnerships as Joint Work at Boundaries

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This article presents a conceptual framework for analyzing how researchers and district leaders perceive and navigate differences they encounter in the context of research–practice partnerships. Our framework contrasts with images of partnership work as facilitating the translation of research into practice. Instead, we argue that partnership activity is best viewed as a form of joint work requiring mutual engagement across multiple boundaries. Drawing on a cultural–historical account of learning across boundaries (Akkerman & Bakker, 2011) and evidence from a study of two long-term partnerships, we highlight the value of the concepts of *boundary practices* in organizing joint work and *boundary crossing* as a way to understand how differences are recognized and navigated. The framework has implications for how partnerships can surface and make productive use of difference in organizing joint work and for how funders can better support the work of research–practice partnerships.

Many policymakers, researchers, and practitioners agree that there is a wide gap between the worlds of educational research and practice. Researchers often imagine that the best way to bridge that gap is to translate basic research on learning into interventions that are feasible for teachers to implement, effective for a wide range of students, and accessible to any student who might benefit from them. It is hard to imagine a more worthy goal for education—to build knowledge of and access to effective interventions—but accomplishing that goal has proven elusive for education. There are many practical obstacles to achieving this aim, but there are also less visible obstacles that have to do with how one conceptualizes the relation between research and practice. In this article, we argue that thinking about how researchers can support improvements to educational practice as a process of translation is one of those obstacles.

We have chosen to focus on the problems associated with what we are calling the *translation metaphor*, because policymakers have, for decades, focused significant attention on addressing

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breakdowns in the translation process as a means to close the gap between research and practice. Throughout the 20th century, policymakers funded multiple initiatives and centers (e.g., the regional educational laboratories, still active today) to support improved dissemination of research findings to practitioners so that they could guide improvements to practice (Lagemann, 1997). In the early 21st century, the Education Sciences Reform Act of 2002 authorized the creation of the Institute of Education Sciences (IES), which in turn developed field-initiated grant programs that supported two basic types of translation activities: designing and developing interventions grounded in basic research and testing interventions under real-world conditions in a wide variety of settings. IES's first director, Grover Whitehurst, described the research–practice gap and IES's approach to addressing it this way:

> Education is a field in which there is a gulf between the bench and the trench, and in which the trench is complicated by many players, settings, and circumstances. . . . The model that [Thomas] Edison provides of an invention factory that moves from inspiration through lab research to trials of effectiveness to promotion and finally to distribution and product support is particularly applicable to education. (Whitehurst, 2003, pp. 3–4)

Whitehurst's vision of an invention pipeline that moves from research into practice represents a deeply held view, and it continues to inform interagency guidelines for field-initiated research and development (see, e.g., Institute of Education Sciences & National Science Foundation, 2013).

The translation metaphor and its associated images of pipelines and invention factories provide one, we believe, with an impoverished way of thinking about the relation of research and practice. Researchers need an alternate conceptual framework that more adequately accounts for the complex and difficult challenges researchers and practitioners face together, if research is to inform educational improvement. The need for a better way of describing how researchers and practitioners work together on improvement initiatives becomes particularly clear in light of new federal initiatives to promote the development of long-term partnerships between researchers and practitioners (e.g., IES's Researcher–Practitioner Partnerships in Education Research program) and recent scholarship on the relation of research and practice in education (e.g., Coburn & Stein, 2010). What is needed is a framework that helps one understand the strategies that researchers and practitioners employ to design, develop, and implement strategies collaboratively for improving teaching and learning in continuously evolving environments.

In this article, we draw on examples from a 2-year study of research–practice partnerships to present and illustrate a framework for understanding the relation of research and practice that does not rely on the metaphor of translation. The partnerships we have studied teach us that researchers and practitioners working in partnership are engaged in processes of collaboration and exchange that are both messier and potentially more transformative than the one-way translation of knowledge of research into practice. In such partnerships, researchers and practitioners engage in what we call *joint work* to define, create, implement, and study strategies for improvement. By joint work, we mean that both district goals for improvement and aspects of the research are defined and evolve through interaction, rather than being planned fully ahead of time or defined by either researchers or practitioners independently of one another. Of course, while engaging in joint work, participants encounter multiple *boundaries* that separate the world of research from the world of practice, as well as boundaries between subunits within districts and within research teams. This makes sense because researchers and practitioners live

in partially overlapping, but distinct, cultural communities (Caplan, 1979), and school districts have complex, segmented organizational structures (Spillane, 1998). In this article, we argue for a conceptualization of research–practice partnerships as *joint work at boundaries*, and provide what we believe is a more productive framework than translation for analyzing the relations of research and practice in design partnerships.

Because the translation metaphor is a compelling one, for many, for understanding how research and practice should relate, in the next section, we first unpack the logic of translation, taking care to point out its limitations. We then outline an alternative conceptual framework for understanding the nature, challenges, and benefits of partnerships. Our framework is, first and foremost, a descriptive, rather than prescriptive, framework for how researchers and practitioners relate to one another, but we believe this conceptualization offers practical guidance to partnerships attempting to develop shared research, design, and implementation strategies. We also argue that it offers a more nuanced and balanced perspective on the mutual learning—and obstacles to learning and change—that can take place in partnerships. Finally, we argue that this framework can also inform funding agencies and policymakers seeking to understand the dynamics and potential of partnerships and to make decisions about what kinds of partnerships to support and how.

UNPACKING THE TRANSLATION METAPHOR AND ITS LIMITATIONS

In this section, we describe the logic of the translation metaphor and detail how, in our view, it limits one's ability to understand both the activities and outcomes of efforts to relate research and practice more productively to support educational improvement.

Unpacking the Translation Metaphor

It is important to unpack the metaphor of translation because, like other metaphors, it structures not only how one thinks, but also how one acts and relates to others (Lakoff & Johnson, 1980). Consider Whitehurst's (2003) call for an invention factory that moves "from inspiration through lab research to trials of effectiveness to promotion and finally to distribution and product support" (p. 4). In that call, he framed translation as directional movement, a movement from research to practice, a meaning echoed in other prescriptions emphasizing the importance of translation for educational improvement, such as this one from a National Research Council report:

> The *translation* of research findings into forms useful for educational practice . . . will require large-scale, systematic experimentation and demonstration to transform knowledge about human learning and the development of competence into the working vocabulary of teachers and schools. (Committee on a Feasibility Study for a Strategic Education Research Program, 1999, p. 3, emphasis in original)

This quote evokes the everyday meaning of translation as the act of rendering meanings from one language into another, in this case, translating research knowledge into the vocabularies of teachers and schools. Educational researchers concerned with improving translation, not surprisingly, pay close attention to rendering meanings characterized using research language into

the everyday language of practitioners. As Dynarksi and Kisker (2014) characterized the challenge in a report directed to researchers writing for practitioners:

> If the objective is to communicate findings to an audience of practitioners, policymakers or interested readers who are not researchers, researchers should not assume that their audience is familiar with research concepts. For this audience, communicating with research jargon is inefficient. To various degrees, depending on backgrounds and training, readers will have to decipher the jargon and guess at its meaning. They may not decipher it correctly, or they may get the meaning wrong, or they may simply stop reading. (p. 1)

Although we certainly agree that making research findings accessible to practitioners and policymakers is an important goal, the translation metaphor suggests that translators (researchers) should render meanings from the language of research into the language of practice so that meanings are not incorrectly transformed or abandoned. The directionality of learning is one-way, and the goal is for knowledge to travel unchanged.

Another aspect of the translation metaphor relates to another everyday meaning of the term, namely the process of carrying something from one place to another. For many researchers, the "product" (to use Whitehurst's, 2003, term) that is carried is a program or intervention, as implied by this passage from the preface of Constas and Sternberg's (2006) edited volume, *Translating Theory and Research into Educational Practice*:

> Many of the authors from all three parts of the book have committed between 10 and 40 years to narrowing the gap between research and practice. Viewed as a collective effort to translate theory and research into educational practice, the interventions and programs describe across the volume represent nearly 200 years of work. As a compendium of successful strategies, we believe this book may help others identify ways to make their own research more useful to practice communities. (p. xii)

The assumption here is that translation entails the development and testing of interventions and programs that can be packaged and tested, with findings from tests organized into a compendium that practitioners will find useful. This same assumption about the value of packaged interventions and research summaries underlies efforts such as the What Works Clearinghouse, an IES initiative that provides brief reports of findings of the effectiveness of a wide range of educational interventions and improvement strategies (Wissick, 2010). Such efforts are thought to facilitate translation, because they increase leaders' access to trustworthy, clearly communicated research findings. In so doing, the assumption is that they provide the necessary conditions for leaders to make more and better decisions that are informed by research (Dynarski, 2008).

Limitations of the Translation Metaphor

There are several limitations of the translation metaphor; we highlight three here. First, it is a poor way to characterize arrangements between researchers and practitioners that aim for greater mutualism and reciprocity. Research–practice partnerships are an example of such arrangements. In them, both researchers and practitioners help define the focus of work, developing shared ownership over the problems addressed and goals pursued (Coburn, Penuel, & Geil, 2013). In addition, researchers value the insights that they gain from practitioners, suggesting that sometimes knowledge moves productively from practice to research, not just in a linear fashion from research to practice as the translation metaphor implies. As then IES-

director John Q. Easton put it, the aim of research–practice partnerships is to promote research use "not in a unidirectional 'research to practice' sense but in a more reciprocal 'practice to research' pathway" (Easton, 2013, p. 18).

A second limitation of the translation metaphor is that it does not accurately describe what happens when interventions and programs move from one setting to another. Empirical studies of the process of design and development shows that the interventions, themselves, are rarely static; their design continues to evolve in and through the implementation and scale-up phase as researchers learn from practitioners' experiences and in response to varied context, altering designs along the way (Datnow, 2002; Peurach & Glazer, 2012). Practitioners directly and purposefully shape interventions, not only by how they implement them but also by proposing changes to designs based on their experiences in the classrooms (Mehan, Datnow, & Hubbard, 2010; Penuel, Roschelle, & Shechtman, 2007). Many of these adjustments to interventions are necessary, because many school districts, especially large ones, are turbulent environments that are subject to changing external pressures and to changing internal structures and dynamics (Honig, 2003).

A third limitation of the translation metaphor pertains to its narrow conception of research use by practitioners. Translation implies that what decision makers should prize most about research is that it can generate trustworthy evidence that they can use instrumentally to make decisions (Weiss & Bucuvalas, 1980). In fact, school and district leaders do value research that can help them make decisions, but they may assess the relevance of research not only on the basis of the strength of the research design, but also on whether the study context was comparable to their own and on the basis of anticipated challenges to implementing programs (Tseng, 2012). Moreover, practitioners can, and do, value research that helps them gain new insights into problems and that facilitates the search for new kinds of solutions to persistent problems (Weiss & Bucuvalas, 1980). Practitioners also, in some instances, report that they value the opportunity to participate directly in research on programs in their schools and districts, helping to shape research questions, collect data, and interpret findings (Earl, 1995). These kinds of opportunities are not uncommon within certain kinds of research–practice partnerships, where interactions between researchers and practitioners are frequent and can entail the collaborative design, development, and implementation of new programs (e.g., Dolle, Gomez, Russell, & Bryk, 2013; Donovan, Snow, & Daro, 2013). However, collaborations like these cannot be fully understood by the translation metaphor, which is currently a commonplace view of the relationship between research and practice.

AN ALTERNATIVE FRAMEWORK FOR ANALYZING RESEARCH–PRACTICE PARTNERSHIPS

Here we present an alternative framework for understanding relations of research and practice that directly addresses the first limitation we highlighted. Our framework draws on cultural historical theories of learning and development and provides conceptual tools for understanding how people come together across differences to collaborate in workplace contexts and learn from one another (e.g., Engeström, Engeström, & Karkkainen, 1995; Engeström, Engeström, & Kerosuo, 2003; Suchman, 1994). Cultural–historical perspectives offer a view of diversity and

difference not as obstacles to be overcome, but as a value inherent to social and professional activity. Akkerman and Bakker (2011) explained that the "emphasis is on overcoming discontinuities in actions or interactions that can emerge from sociocultural difference rather than overcoming or avoiding the difference itself. The process of reestablishing action or interaction is seen as a resource for learning" (p. 136). These conceptualizations can inform one's understanding of mutual learning and of the benefits, challenges, and outcomes of partnerships and other kinds of relationships between researchers and practitioners in more productive ways than the unidirectional translation metaphor makes possible.

Attention to boundaries is central to cultural historical accounts in that it highlights how sociocultural differences can become salient and experienced in action, as people from different professional, cultural, and institutional groups interact in new ways. The concepts of boundaries and boundary crossing (Akkerman & Bakker, 2011; Engeström et al., 1995; Suchman, 1994) help one understand how these differences form the context in which people engage, as well as the continuities and discontinuities they experience in the process. Here, we argue that the key concepts of *boundary crossing* and *boundary practices* can enrich the understanding of the interactions of research and practice, particularly in the context of research–practice partnerships. We suggest that the joint work of partnerships requires participants to engage in boundary crossing, and that joint work is accomplished through boundary practices, which are routines that only partially resemble the professional practices of researchers and practitioners.

We illustrate these concepts with examples from an empirical study of research–practice partnerships. In the larger study, we have examined three research–practice partnerships in which researchers and district leaders work together toward the goal of improving middle school mathematics in each district. Here, we draw on data from two of these partnerships, which are part of the Middle School Mathematics and the Institutional Setting of Teaching (MIST) project, in which a team of learning scientists, policy researchers, and mathematics education researchers from multiple universities have been working, since 2007, in collaboration with two school districts. The research teams work closely with district leaders in curriculum offices, but their work spans multiple district departments and includes principals and instructional coaches.

Briefly, the focus of the two partnerships in our study we highlight here is to analyze, inform, and codesign strategies for improvement of mathematics instruction at the middle school level. Both district partners are large urban districts with high percentages of students eligible for free or reduced-price lunch. Both also have a high percentage of students from nondominant communities; one of them serves a large population of English learners. Laurel School District is located in a southern U.S. state, and Evergreen County School Districts is located in a southeastern U.S. city (both district names are pseudonyms). The work is informed by—but not limited to—the large body of constructivist research on mathematics teaching and learning (e.g., Cobb, Stephan, McClain, & Gravemeijer, 2001; Yackel & Cobb, 1996) and implementation of mathematics reform from the perspectives of mathematics education researchers and policy researchers in education. At the same time, the researchers believed that there was not yet an adequate theory for how to support improvement to the quality of mathematics instruction at scale, and so an explicit purpose of their partnership was to develop such a theory (Cobb & Jackson, 2011).

UNDERSTANDING PARTNERSHIPS AS JOINT WORK AT BOUNDARIES

In this section, we explicate the key concepts of boundary crossing and boundary practices and illustrate them with examples from the research–practice partnerships we have studied.

Boundary Crossing

Partnerships between researchers and practitioners require participants to navigate multiple cultural, professional, and organizational differences. Some of these differences are linked to differences between the way researchers and practitioners tend to frame and deliberate about problems and design solutions to problems of practice with colleagues (e.g., Reiser et al., 2000). Other differences are associated with the expected pace of work (Coburn et al., 2013). For example, district leaders feel a strong sense of urgency; they want solutions quickly so that they can put innovations or policies in place to meet students' needs now. By contrast, research often proceeds slowly, as researchers prioritize generating evidence through cycles of inquiry and analysis before they are ready to recommend action. When people from different cultural and institutional domains collaborate, these differences become salient, and they can become obstacles that close down collaboration, or boundaries to be understood and navigated.

Drawing on cultural historical activity theory, we name these encounters with cultural difference instances of boundary crossing. Boundary crossing refers to an individual's transitions and interactions across different sites of practice (Akkerman & Bakker, 2011). It entails "encountering difference, entering onto territory in which we are unfamiliar and, to some significant extent therefore, unqualified" (Suchman, 1994, p. 25). In the case of research–practice partnerships, entering into another's territory might entail the social and material aspects of a researcher entering a district leader's office to join a meeting led by the leader, or it might involve a district leader trying to map or represent an unfamiliar territory of the district to researchers in the context of a partnership meeting. Researchers might feel unqualified to offer advice to a district leader on a topic not studied in response to a request, and a district leader might feel unqualified to help a researcher present about the partnership at a conference for researchers.

A focus on boundary crossing helps us investigate the particular ways that joint work can be challenging in research–practice partnerships. The general differences between the norms and practices of researchers and those of district administrators may be evident, but some cultural boundaries are more easily crossed than others. For example, one researcher in our study reflected that when she is working with the mathematics department, she feels as though they are speaking the same language, but when she talks to district leaders in other departments, they have difficulty understanding one another. Our study of partnerships highlights the fact that school districts are not monoliths, and the different actors and subunits that make up departments do not always work in a coordinated fashion or toward common goals (Farrell & Coburn, 2014; Spillane, 1998). Depending upon who the primary participants from the district side of the partnership are, some important subunits whose work affects the partnership may not be represented. As a consequence, conflicts may arise, or the goals and initiatives of the partnership may need to be coordinated across different units within the district.

There can also be internal differences within research teams. Some of these differences are linked to disciplinary boundaries that may need to be crossed. Subfields within education rely on different theories and methods, requiring that teams engage in work to negotiate differences to accomplish the common aims within a project (Lehrer & Petrosino, 2013; Penuel, Severance, Johnson, Leary, & Miller, 2014). In the case of the partnership we studied, multiple theoretical perspectives were employed, including perspectives intended to guide the design of classroom learning environments, professional development for teachers and leaders, and organizational processes for improvement. Researchers came into the project familiar with some of the methodologies typically employed by others on the team, but not all of them. Developing research plans required collaborative learning and blending of different theoretical perspectives (see Cobb, Jackson, Smith, Sorum, & Henrick, 2013, for an internally developed account of the process).

The dispositions and stance that partners bring to partnerships likely have implications for how and whether boundaries are navigated. As Tiffany, an administrator, explained:

> The discussion that we have, it's not them acting like they know more than anybody else. They take our experiences and all the red tape and everything that happens here and work with us to work past those things. We discuss things on what research says, really, how we can change those things and make sure that we're moving in the direction that we want to be moving in. That's kind of more partnership than consulting. A consultant comes in and tells you, "This is what I do." You hire them because you have an issue. They've [researchers in the partnership] helped us find our issue. (Interview, 12/18/13)

In this excerpt, the district leader marked the boundaries between fellow leaders and researchers with the pronouns *we* and *they* and *us* and *them*, but highlighted the value of the different perspectives researchers bring to the partnership. As Kerosuo (2004) has argued, phrases that point to boundaries or borders such as "red tape" and "working past those things" (p. 46) can be expressions of both boundaries and boundary crossing. Tiffany was pointing here to institutional obstacles (i.e., red tape), as well as clearly defined boundaries between consultants and the district and contrasting this to the boundary crossing work of the researchers who "take our experiences" and "work with us to work past those things [red tape]," to "help us find our issue."

The notion of boundary crossing helps us attend to potential boundaries both between and within cultural and organizational groups, as discussed. But boundary crossing may also be accomplished through specific *moves*, often purposefully employed in the context of interaction to help navigate cultural differences. In moments such as this, it is often improvised, but strategic, behind-the-scenes boundary crossing that helps to establish conditions for new lines of joint work in partnerships. For example, Talya, a central office content specialist in Evergreen, shared that she helped researchers and district leaders to see where they could find common ground, when neither side could see clearly how a big change in district leadership might allow for continued partnership work. Talya reported telling one of the researchers after a partnership meeting that the district was in transition:

> And I kind of laid the background and told him some of the hot-button topics, which was really, really helpful that the [research] folks caught on to our hot-button topics, because their recommendations were around those hot-button topics, so then our focus of our work ended up being there.

> When I say "hot-button topics," I'm talking about, like, the PLC work or the shift in Common Core state standards and instruction. Those hot-button topics, for example, are really what convinced Emmett [the executive academic district leader]. So when Quinn [researcher] had the conversation with Emmett, it was around the PLC work. And he thought that, "OK, if we can get somebody to come in here and help support that PLC work," which was his initiative, "we're on track." So I think that was one piece of the conversation, one piece of the puzzle, that helped this process along. (Interview, 12/18/13)

Here Talya aligned herself with the district, referring to its hot-button issues as "our" issues, but also positioned herself as an ally of the research team, helping them to cross boundaries effectively by framing their work within the terms of the new district leadership's priorities. As an instance of boundary crossing, this example illustrates what we see as an interesting aspect of boundary crossing. Salient differences (us/them) are enacted and preserved between researchers and practices, but at the same time crossed in an effort to reframe, align, and advance the work of the partnership.

To summarize, whereas the concept of boundaries highlights the complex cultural and institutional differences that make up the context of most partnerships, boundary crossing involves the intentional efforts of partners on both sides to make space for and enter into joint work with partners whose work involves responsibilities, expertise, pressures, and strategies different from one's own. The notion of boundary crossing, then, provides a way to identify when and how particular cultural and institutional boundaries become relevant in research–practice partnerships, and can, in turn, provide guidance about the particular moves that can help bridge and make productive use of boundaries.

Boundary Practices

Although boundary crossings are moments when individuals or groups recognize differences, *boundary practices* are the more stabilized routines, established and sustained over time, that bring together participants from different domains for ongoing engagement. Boundary practices can be defined as new routines that bridge the practices of researchers and those of practitioners as they engage in joint work. Within cultural historical activity theory, boundary practices are understood to be in-between and hybrid activity systems that draw on cultural forms familiar to some of the actors but that are taken up in novel ways in the site of joint work (Gutiérrez, Baquedano-Lopez, & Tejada, 2000). Productive boundary practices make surfacing cultural differences and conflict a routine part of practice and frame these as resources for joint work (Guile, 2011, 2012). In addition, they enable people to coordinate activities across multiple contexts, using common objects (sometimes called *boundary objects*) that anchor joint work (Akkerman & Bakker, 2011; Star, 2010; Star & Griesemer, 1989).

Several good examples of boundary practices appear in the MIST partnerships we have studied. The cycle of data collection and analysis, feedback, and codesign that researchers and district leaders engage in is punctuated by routines and tools developed so that district policies and practices inform the research, and vice versa. One of these boundary practices, for example, is the yearly production of a theory-of-action report. This activity is researcher-led, but district leaders' theories make up the content of the report. The report is based on researchers' interviews with school district leaders about their visions and priorities for instructional

improvement, including their views of how change would happen within the current district organization. This particular practice helps to structure a yearlong cycle of inquiry into how well the districts' own strategies for instructional improvement are working. The practice is hybrid and would have been unfamiliar to both researchers and district leaders prior to both partnerships' inceptions in two respects. For researchers, the typical source of theory is not practitioners but, rather, the publications of other researchers. For researchers to make participants' own perspectives on how to improve instruction at scale the basis for a theory of action is an unusual move. For district leaders, although their district improvement strategies may be the product of intensive internal deliberation, having an external representation from a research team of their theory of action—along with descriptions of how district leaders' ideas vary—is not common. In addition, instead of turning to peers in the research communities to judge the adequacy of the representation of the theory of action, researchers submit the report back to district leaders for feedback and review.

A particularly significant boundary practice that emerged in the partnerships was the codesign of professional development for teachers, principals, and coaches. Each year, the researchers produced an annual feedback report and the members of the partnership held meetings to share findings with the goal being to engage in codesign of district strategies based on research findings. A key goal for the MIST partnerships was to engage in collaborative design of professional development activities to support the partnerships' broader goals of improving the quality of mathematics instruction at scale. Yet, going into the partnership, members of the research team had different levels of experience with design and very different institutional and professional practices of design work. A key difference pertained to design process: The researchers on the team were committed to a particular approach to research that called for iterative design informed by specific conjectures (design-based research; Cobb, Confrey, diSessa, Lehrer, & Schauble, 2003). In district leaders' routine practice, on the other hand, there is often little time or opportunity to iterate on designs or to test conjectures formally.

Across these different approaches, and in the context of the district context and pressures, the participants in the partnership had to find their way into collaborative design by organizing a set of hybrid practices that drew from familiar tools and routines of each group but that fit the circumstances of their design. In one of the districts, the practice of codesign became a new routine of the partnership, yet it did not resemble the routine practices of either researchers or district leaders. District leaders designed professional development differently because of the participation of members of the research team. For example, in one district, math leaders would typically design professional development (PD) then roll out the PD as presentations in a so-called *train the trainer* model. Working with the researchers, partners decided to design PD with a small group of participants who held key roles in the district (content director, researchers, coaches, principal supervisors), and first pilot the PD with a smaller group of teachers. In this boundary practice of codesign, the researchers were also working in new ways; for example, they engaged in design that took place at a quicker pace than is typical for university researchers, and were taking into account the perspectives of leadership, as well as content area specialists. Another hybrid dimension of the codesign work was the discipline of using research to guide planning—a novel aspect of the design routine for district leaders.

Not all partnerships will land on codesign as a focal boundary practice that fits their circumstances, but it is likely that all partnerships need to establish some kind of boundary

practice. Boundary practices like codesign anchor the collaboration, and can be a key means by which partnerships negotiate the focus of their joint work (Penuel, Coburn, & Gallagher, 2013). Just as important, they are a means by which the partnership realizes the benefits of bringing people with diverse backgrounds and expertise together to work on a common problem, namely by surfacing and making productive use of peoples' different perspectives and skill.

IMPLICATIONS OF THE FRAMEWORK FOR PARTNERSHIPS

We argued at the outset of this article that the translation metaphor was not a useful one for conceiving of how research and practice relate in partnerships. The notion of translation limits one's ability to understand the nature of what is challenging about collaborative work, as well as what is exchanged, learned, and transformed when researchers and practitioners partner. Instead, we have put forth the key concepts of boundary crossing and boundary practices as providing a new way to describe joint work within partnerships, illustrating these ideas with examples of our study of research–practice partnerships. In the following, we outline some of the potential implications of our alternative conceptualization of research–practice partnership activity for forming and maintaining partnerships. In addition, because the translation metaphor has historically informed funding initiatives that aim to better bridge research and practice, we offer implications for funding research–practice partnerships that attend more closely to the boundary work and mutual learning that is at the heart of partnerships.

Promoting Boundary Crossing

As we have illustrated, researchers and practitioners must recognize and navigate different kinds of boundaries when engaged in collaboration—including those between researchers and practitioners, but also always within those groups as organizations, as well. Attending to the different kinds of boundaries that are likely to emerge, given participants' range of institutional and professional roles, is important when participants come together to understand and work to solve commonly identified problems of practice. This may require individuals to cultivate a particular disposition to listen carefully to others' ideas, wherever they may come from, and to develop skill in asking questions to check for understanding. Differences and boundaries should become genuine objects of curiosity for partners to learn about, to better understand the cultural worlds of participants in the partnership.

Although some boundary crossing is impromptu and occasioned by the need to make sense of emerging issues and concerns, it is possible to build in structures and routines that provide sustained opportunities for boundary crossing. Careful attention could be paid to how to structure these practices so that they support the most important goals of the partnership. Boundary practices like those illustrated previously may lead to more stable routines that bring together different perspectives on common aims. Partnerships can develop different strategies for naming and navigating boundaries that are likely to affect the work. Some partnerships, like those formed by the Strategic Education Research Partnership (SERP) Institute, house research and design staff within school districts as a means to promoting boundary crossing (Donovan et al., 2013).

Implications of Boundary Crossing for Funding

At present, funding agencies typically require brief descriptions of key personnel and their proposed roles in a research project, along with biographical sketches that detail their qualifications for the work. Beyond considering whether the leaders bring relevant training and expertise to the problems the partnership plans to address, it is critical that partnerships include leaders who have a disposition toward spanning the boundaries that researchers and practitioners each cross when they enter into one another's territory. Evidence of such a disposition from researchers might include past partnership activity with districts, experience in collaborative design with teachers, and a strong publication record in both publications that practitioners are likely to read. From practitioners, involvement in past research projects as a collaborator, regular attendance or presentations at research conferences, and leadership roles within national professional organizations might be good indicators of a disposition toward boundary crossing.

Developing Boundary Practices to Support Joint Work

In developing partnerships, attention to the creation of boundary practices could help leaders and partners negotiate the initial focus of their joint work and renegotiate it as necessary. Boundary practices blend some familiar and some unfamiliar elements of the existing routines of the researchers and practitioners in the partnership, so that the practice can generate a broad repertoire for organizing joint work together. Boundary practices can also provide a means for partners to surface relevant expertise of both people in the practice and those whose expertise might be relevant, but who are not currently part of the partnership. Often in partnerships, as work unfolds, new challenges and opportunities emerge that require both new forms of expertise and new ways of making use of it (e.g., D'Amico, 2010).

Implications of the Importance of Boundary Practices for Funding

One of the key benefits of paying attention to the development of boundary practices in research–practice partnerships is that they can draw upon the expertise and successful ways of working of both researchers and practitioners. But practices related to who gets funded can undermine efforts to maintain mutualism in joint work, a key aim of research–practice partnerships. In most research and development funding streams today, grants go to researchers. This gives researchers both the authority and ultimate responsibility for guiding projects, even when projects aim to involve practitioners as collaborators in the work (Penuel et al., 2007). If partnerships are to develop lines of joint work that differ from the routine practice of both researchers and practitioners, new models of shared funding are needed. Some partnerships, recognizing the need to address this issue on their own, have created internal governance structures whereby practice organizations share control over the partnership budget and also control the portion that goes to their organization (Bang, Medin, Washinawatok, & Chapman, 2010). Funding agencies can not only promote the use of explicit governance and management strategies for promoting equity, but they can also encourage collaborative proposals and explore alternative funding models.

Boundary Practices Require Ongoing Mutual Engagement

Ongoing engagement is so important in partnerships—and also so challenging—because partners are working across institutional, cultural, and professional divides. Continuity can be structured in many different ways, but the important point is that efforts to carve out routines and joint work in partnerships must be ongoing, because joint work usually does not fit squarely in any of the partners' primary institutionally sanctioned roles and responsibilities. A simple strategy for maintaining continuous mutual engagement is to maintain a schedule of regular meetings and a standing agenda for the meeting that allows the partnership to track its progress. Although it may be difficult to gather all participants together more than a few times a year, frequent meetings among a core team of leaders are critical to keep up with the rhythms of a school district. Regular meetings are a key means by which continuity is established so that the leaders become comfortable expressing divergent points of view and confronting conflict within the partnership. At the same time, regular meetings are not likely to be sufficient for partnerships to take advantage of sudden opportunities or threats to their joint work. Partners need to be ready to schedule meetings outside the regular routine, to maintain continuity.

Partnerships may also benefit from organizing mutual engagement into cycles of activity, as the MIST team did. The MIST cycles fit to the timing of the school year, but some strategies for mutual engagement employ more rapid cycles of developing and testing of change strategies. For example, in their work to improve new teacher induction and retention, researchers and practitioners who are part of the Building a Teaching Effectiveness Network are engaged in 90-day cycles of planning, testing, studying, and revising strategies for improving principal feedback to new teachers (Coburn et al., 2013). This work, which is being facilitated by the Carnegie Foundation for the Advancement of Teaching, follows a plan–do–study–act cycle adapted from improvement research in healthcare (Dolle et al., 2013). Important elements common to both of these cycles are: developing specific indicators of success for designs developed by the partnership, testing those designs in practice, and reviewing evidence from the test to refine designs.

Implications of the Role of Ongoing Mutual Engagement for Funders

The idea that researchers and practitioners will need to engage over time with one another and periodically renegotiate the focus of their work diverges significantly from how research and development is conceptualized in most funding agencies' requests for proposals. At present, as research moves from design and development to effectiveness and scaling up, people involved in developing solutions are expected to have less and less involvement in the research effort, beyond what would be considered routine practice (Institute of Education Sciences & National Science Foundation, 2013). Requests for proposals typically require teams to formulate problems they will address over a 3- to 5-year period and to specify a plan for design and implementation well ahead of time, in the proposal. The relevant problems of practice that district leaders are likely to face if a proposal is funded may not be the same as the one outlined in the proposal, however. In addition, implementation can create new, unanticipated problems that a partnership must address if it is to succeed. Funding agencies need to not only allow for, but also expect that there will be, a need to renegotiate scopes of work, based on emerging problems of mutual

concern to participants in the partnership. They need to put mechanisms in place to work closely with leaders of partnership to ensure that this renegotiation fits within the broad vision for improvement laid out in the proposal but that it builds from what partners are learning as they implement that vision.

CONCLUSION

In this article, we have presented a conceptualization of the activity of research–practice partnerships as joint work at multiple boundaries, and argued for the concepts of boundary crossing and boundary practices as productive for understanding how research and practice relate. Our conceptualization contrasts sharply with the traditional translation metaphor that emphasizes the ideal relation of research and practice as unidirectional and one-sided. We have illustrated how these ideas help us gain insight into the key ways that partners negotiate and renegotiate the focus of their joint work and navigate cultural and other differences they encounter. Finally, we have offered a few of what we see as the most important implications of our framework for organizing, supporting, and funding partnerships. It is our hope that others will imagine additional implications for this framework and find different illustrations of it in their own work inside partnerships, whether as researchers or as practitioners. It is also our hope that this framework provides a path beyond the list of challenges that we know research–practice partnerships face and toward a space of possible solutions to those challenges.

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