Teaching is an ancient activity. As long as there has been some skill or knowledge that needed to be passed on to the next generation, someone knowledgeable was needed to assist with that learning. The role of being a teacher predates the concept of formal education, the construction of school buildings, and modern conceptions such as discreet courses of study, textbooks, and standardized assessments. Institutions designed to support the teaching of larger groups of students are more recent developments (Gutek, 1995). Formal education of teachers is newer still.

The first forms of teacher education were preparation in the skills and subject matter that needed to be taught. Once someone thoroughly learned the material, they were considered prepared to take on apprentices. Medieval European versions of the Masters degree and doctorate were originally formal designations that qualified someone as expert enough to teach a subject (Labaree, 2008; Shulman, 1986). The establishment of pathways into the vocation of teaching younger children occurred more recently. China formalized its shifan system of teacher education roughly one hundred years ago (Li, 1999; Tan, Zhuang & Wendel, 1985). The establishment of normal schools and state controlled processes of teacher certification in the United States began around the same time period (Angus, 2001). Even more recently, international organization bodies such as the World Bank, OECD, UNESCO, UNICEF or Education International
have begun playing major roles in teacher education, particularly ongoing and in-service teacher education (Spring, 2015). Universities in the United States began to acquire near exclusive control of teacher certification around the 1970s, a mere forty years ago (Labaree, 2008). It is only since then that the familiar debates about what coursework and practical experiences aspiring teachers need have occupied the attention of academics and policy makers.

That being said, approximately one hundred years is a long time to have been discussing the appropriate content and methods of teacher preparation. It has been enough time for a history of practice to be recorded, a scholarly literature on teacher education to develop, and multiple schools of thought about appropriate teacher education curriculum to gain adherents. Add to this the inevitable variations in the cultural and political influences on teacher education policy and practice across the globe, and we should not be surprised that the international landscape of teacher education is varied and complex.

**MAKING A MAP**

The chapters in this section of the handbook offer multiple maps of this complex intellectual and political terrain. The metaphor of a map is appropriate here since every map is a projection that involves the emphasis of certain features of a terrain and an accompanying omission of others. Highway maps emphasize roadways at the expense of attention to the shape of the land. Topographic maps provide mathematically precise detail about the shape of the land, but are only accurate at smaller scales because they can’t account for the curvature of the earth. Globes can account for the curvature of the earth, but cannot be seen all at once like a planar map.

Similarly, the overviews of teacher education scholarship and policy presented in these chapters offer various cross sections of the field – from a review of the philosophical assumptions underlying contemporary teacher education scholarship and a history of the enterprise of teacher education, to an analysis of how a global accountability movement is affecting teacher education practice, an examination of the relationship between teacher education at various grade levels, comparisons of pre-service and in-service teacher education, and comparisons of teacher education priorities in nations with different levels of industrialization and wealth. Although complementary, these mappings of the intellectual landscape of teacher education scholarship should not be considered comprehensive. These are only a few of the many possible ways teacher education research might be surveyed and assessed.

Neither should these chapters be considered an elaborate form of triangulation – each dispassionately depicting teacher education from a certain angle, the combination of which can help us assemble a single accurate picture of the current state of teacher education. Maps also play a part in constituting
the future of the territory they editorially represent. Maps of soil properties can inform people where it is best to establish farms for particular crops and thus shape the way humans inhabit landscapes. Similarly, conceptual maps can highlight intellectual and political possibilities and thus draw scholarly world travelers (Lugones, 1987) to some areas of inquiries over others. Maps can highlight dangerous territories and warn people away from those places. In the same way, critical scholarly surveys can warn researchers about design flaws in their empirical studies and dangerous ideological complicities lurking in their unexamined assumptions. Finally, maps can fail to represent significant features of reality altogether, such as the maps of settler colonialists who still fail to mark the sovereign territories of Indigenous peoples all over the planet, thus enabling continued displacement of our Indigenous brothers and sisters. Similarly our conceptual maps can fail to note a particular effect of research and policy on various persons and communities, thus reinforcing habits of silence and neglect of certain educational experiences and priorities.

In all these ways overviews of the research literature are as much interventions as they are descriptions. They draw our attention to various aspects of an enterprise, thus encouraging some forms of relation and implicitly discouraging others. The essays in this section are no exception, nor should they be. Teaching and teacher education is about preparing new generations to face an always indeterminate future. As such, each of these chapters offers a vision of what teacher education currently is as a prelude to helping us imagine what it could be.

CHAPTER SUMMARIES

One of the common features of the current landscape of teacher education scholarship that emerges across all six chapters in this section is a concern about the relative influence of state authority and local authority on teacher education. National and local governments have an interest in monitoring the quality and content of teacher education even as the teaching professionals often defend practitioner autonomy and the ability to adapt teaching to local needs, priorities and unique learning opportunities. This handbook is being published at a moment when state authority over teacher education is ascendant. We are witnessing a global movement to centralize control over k-12 teaching and teacher education. These efforts struggle with the diversity of contexts that influence teacher education practice and the divergent interests invested in the preparation of teachers. This struggle is reflected in the chapters of this section.

Chapter 2: Philosophy in Research on Teacher Education: An Onto-ethical Turn by Jerry Rosiek and Tristan Gleason reviews the foundational concepts that have shaped the current landscape of teacher education policy and practice. They identify the way an emphasis on the epistemology of teaching practice transformed the field of teacher education scholarship over the last three to four decades. They
raise questions about the way an exclusive emphasis on the epistemic foundations of teaching competency can contribute to unintended consequences, including an over-emphasis on the measurable outcomes of teaching. Citing recent developments in the philosophy of social science that draw on new feminist materialisms, Indigenous philosophy and revisionist pragmatism, they propose that the landscape of teacher education scholarship is in the early stages of a tectonic shift towards an emphasis on the ontological and ethical outcomes of teaching.

Chapter 3: Teacher Education: A Historical Overview by Wendy Robinson argues for the importance of historicizing contemporary understandings of teacher education practice and policy. To this end she provides a broad historical account of the sedimentation of different conceptions of teacher education practice, from a pre-industrial era emphasis on apprenticeship and work-based learning, to the establishment of normal schools, to the move of teacher education programs to universities. She examines the way conceptions of the knowledge, skills and behaviors needed for effective teaching have evolved over time in response to competing contextual influences. Among the most important of those influences is the tension between the teaching profession’s efforts at self-governance and the state’s interest in controlling it. This tension, she observes, has shaped the landscape of teacher education practice for centuries and has become especially acute in recent decades.

Chapter 4: The Quest for Quality and the Rise of Accountability Systems in Teacher Education by Maria Teresa Tato and James Pippin directly examines the efforts of government agencies to influence teacher education curriculum and practice through the creation of state mandated accountability systems. The authors provide a history of the recent rise of teacher education accountability systems. They then examine the effects – both intended and unintended – of these accountability policies at micro, meso and macro levels of teacher education systems. To this end they present case studies of two national education systems that score highly on international exams: Finland’s and Singapore’s. They conclude that current accountability systems often involve a fundamental contradiction, in that they are ostensibly intended to improve education institutions, but may contribute to the elimination of teacher education or undermine its function by diverting scarce resources away from efforts to improve teaching practice.

Chapter 5: Teacher Education Programmes: A Systems View by Rose Dolan looks at teacher education practice and policy as a multidimensional systemic phenomenon. Drawing on contemporary systems theory, she offers three approaches to analyzing the relations between teacher education practice and the context that shapes that practice. She refers to these as research that uses a systems/environment lens, a functions/structure lens, and a process lens. Dolan illustrates the power of these lenses by applying them to a review of teacher preparation systems of three countries that perform highly in international assessments: Finland, Ireland and Singapore. Each of these nations represents an approach to education situated in a different cultural landscape. The chapter illustrates how systems
theory permits the representation of these distinctive cultural histories while also highlighting the common themes of control, freedom and ownership that emerge across all three cases.

Chapter 6: The Continuum of Pre-Service and In-Service Teacher Education by Clive Beck and Clare Kosnik, extends the landscape of teacher education by examining teacher education practice and policy across the whole arc of teachers’ professional careers. Generally, pre-service teacher education curriculum is controlled by university scholars and is organized around some version of constructivist theories of learning that focus on preparing teachers as critical thinkers and problem solvers. In-service teacher education is controlled by districts and state-level administrative professionals and is more focused on promoting discrete techniques that will improve student learning outcomes. As a consequence, these two forms of preparation often work at cross purposes, or, at best fail to complement one another. Beck and Kosnik provide an argument for aligning both pre-service and in-service teacher education under a robust form of constructivist educational philosophy that provides a means for achieving the divergent goals of the multiple teacher education stakeholders.

Chapter 7: What We Know We Don’t Know About Teacher Education by Gavin Brown, calls into question the assumption that there is or should be a constructivist consensus in teacher education practice and policy. Brown draws attention to the fact that most teacher education research is conducted in and on western, educated, industrialized, rich democracies. The teacher education preferences in those nations reflect the underlying cultural values of individualism, fluidity, and the framing of tradition as an impediment to progress. Too often, he observes, teacher education policy makers uncritically assume western conceptions of the purpose of education will fit all nations and communities. As a consequence, teacher educators may become agents of colonialism and cultural displacement. Brown recommends that teacher education scholars find a way to interrogate the known unknowns about teacher education as a means of letting go of the aspiration to find universal best teaching and teacher education practices.

These six chapters provide a range of conceptual vocabulary and variety of theoretical lenses for interpreting the subsequent chapters of this handbook, as well as the international field of teacher education research as a whole. These multiple, at times contradictory, mappings of our field are intended, not to foreclose conversation with summary conclusions, but to stimulate imagination and provoke ambitions. They provide, we hope, guidance for further development of pluralistic practices as the story of teacher education research continues to unfold on a global scale.

REFERENCES


What is less commonly recognized is that [Dewey’s] conception of philosophy required him to think of action itself as instrumental, as a means of ontological change. From this perspective … Dewey’s pragmatism is seen to be a radical form of realism – transactional realism in which instrumentalism plays a subordinate role … and thinking entails active involvement with independent reality, an involvement that is causally efficacious. Even reflection is a means of conducting transformational transactions with the world, a means of changing or reconstructing the world. (Ralph Sleeper, 2001, p. 3)

… the ‘knower’ does not stand in a relation of absolute externality to the natural world being investigated – there is no such exterior observational point. It is therefore not absolute exteriority that is the condition of possibility for objectivity but rather agential separability – exteriority within phenomena. ‘We’ are not outside observers of the world. Nor are we simply located at particular places in the world; rather, we are part of the world in its ongoing intra-activity. (Karen Barad, 2003, p. 29)

Teacher education research over the last four decades has been the site of considerable methodological innovation, with scholars employing everything from behavioral and cognitive experimental designs and socio-cognitive design experiments, to ethnographic and critical ethnographic methods of inquiry, case study methods, narrative inquiry, action research, and many variations within these. This methodological experimentation has been largely focused on an examination of the epistemic foundations of teacher competency. Scholars of teacher education have documented the knowledge that enables effective teaching of specific subject matter content, have critiqued the way ideology distorts teachers’ understanding of their practice, have examined how cultural discourses
mediate teachers’ understanding of student needs and influence teacher professional identity, and have widely deployed the theoretical/practical knowledge binary to argue that some useful knowledge about teaching arises in the course of practice. This research has had a diversifying influence on teacher education curricula. Where once teaching was assumed to require only knowledge of content and general pedagogical techniques, in many places around the globe pre-service and in-service teacher education curricula now feature the study of pedagogical content knowledge, the cultural context of teaching, critical examinations of the ideological biases of curriculum materials, case studies of teacher problem solving, narrative inquiry, and the preparation of teachers to conduct research on their own practice.

All of these forms of knowledge are important to the work of teaching, and scholars of education consistently defend the plurality of these findings. However, the multiplicity of these ways of knowing sit in tension with the larger socio-political climate of teacher education. In a recent review of the field, Cochran-Smith and Villegas (2015) frame the research on teacher education as a ‘historically situated social practice’, noting the influence of a global shift from an industrial to a ‘competitive knowledge society’, and the rapid ascent of neoliberalism as a nearly invisible form of common sense (p. 8). Tato (2015) compares current trends in teacher education in the United States, Finland, Singapore, and Chile, contrasting approaches to selectivity and curricular demands, the locus of decision making and control, and the role of research. While important differences exist, Tato notes that ‘the driving force in recent teacher education policy has been asking programmes to demonstrate that their graduates are qualified to teach against a set of norms or standards outlining what they should know and be able to do’ (p. 173).

Ironically, it is the same focus on epistemology that has underwritten both the proliferation in conceptions of the knowledge that enables teaching and the current policy emphasis on narrowing forms of teacher education curricula. Recent history suggests that further epistemic arguments will not resolve this tension. When debates about teacher education are framed exclusively in terms of what we know about teaching, then under conditions of limited resources – and resources are always limited – the conversation inexorably trends to debates about what we know with a high grade of certainty. Policy makers implement systems of accountability for demonstrating effective teaching that use narrowly circumscribed standards of evidence which appear neutral and uncontroversial. These accountability systems often conspire against efforts to address a wide variety of ways of knowing in teacher education programs.

Epistemic certainty about educational effects, however, is not the ultimate goal of teacher education. Education itself is the goal. In the gap that falls between these two ambitions lie philosophical questions that present both a challenge and opportunity to teacher education researchers. The increasingly ubiquitous rhetoric of accountability in teaching and teacher education is rarely held accountable
itself for its impact on educational processes – how narrow standards of evidence alter schooling conditions, constrain teaching ambition, and ultimately change the very nature of educational experience itself. An analysis of these broadly conceived consequences, we offer, is needed if teacher education is to be genuinely answerable for its effects on children and communities. Philosophically speaking, shifting attention to the holistic impact of our teaching ideals, as opposed to just the known or measurable effects of teaching techniques, would constitute a turn from an exclusive focus on epistemology to a focus on the interdependence between epistemology and ontology in teaching and teacher education research.

These past decades of focus on the epistemology of teaching practice have brought with them some attention to ontological matters. Epistemologies and measurement systems used in education research always carry with them assumptions about what is real and available for documentation. These assumptions have occasionally been examined in the teacher education literature (e.g. Cochran-Smith & Zeichner, 2005; OECD, 2007; Shulman, 1986; Sleeter, 2014). They have not, however, been the central or frequent focus of questioning and debate in the field. Moving ontological matters to the center of conversations about teacher education makes it possible to ask, not just ‘what knowledge about teaching is most certain and reliable’ but also ‘what are the ontological consequences of adopting one system of knowing over another?’ and, ‘What ethical and political values are guiding our decisions to prioritize one set of consequences over another?’

Pursuing this end, the remainder of this chapter surveys contemporary conceptions of teacher education research and examines some of the ontological assumptions informing that research. While a comprehensive inventory of these philosophical assumptions is beyond the scope of this chapter, we review some classically distinct conceptions of research on teacher education and their applications. We seek to understand how the epistemological and ontological commitments of various philosophical research traditions often work against the methodological plurality that the field has striven so hard to produce. This exploration aims at expanding the possibilities of research within the field and identifying new or overlooked conceptual resources for addressing the complex problems of the present.

**PHILOSOPHICAL OVERVIEW OF RESEARCH ON TEACHING AND TEACHER EDUCATION**

At the risk of oversimplifying a complicated history, we offer that the contemporary social sciences, including teacher education, have been shaped by four major philosophical movements over the last century: interpretivism, positivism and post-positivism, critical theory, and poststructuralism. Teacher education also has had its own peculiar philosophical developments, not reflected in the overall arc of social sciences generally. Most notably, the field of teacher
education research has developed a theoretical and empirical literature on the importance of recognizing the practical insights that emerge from within the course of teaching practice itself.

**Interpretivist Research on Teacher Education**

Interpretivism is one of the oldest approaches to secular social inquiry in the Western academic tradition. It refers to a constellation of analytic methods used to understand the historical, social, cultural, economic, and other contextual influences on human affairs. Interpretivist practices of social inquiry have been informed by numerous philosophical and intellectual movements, including hermeneutics, pragmatism and the Chicago school of sociology, semiotics, phenomenology, functionalist anthropology, existentialism, psychoanalytic theory, feminism, anti-colonialism, cultural studies, and others.

In the field of teacher education scholarship, interpretivist programs of research have taken a variety of forms, ranging from cultural and sociological ethnography (Athanases & Heath, 1995; Frank & Uy, 2004; Jackson, 1990; Lortie, 2005; Niesz, 2010; Rosiek, 2005; Woods, 1985; Zymbelas, 2005a), to phenomenological and grounded theory studies (Bengtsson, 1995; Biesta, 2012; Cazden, 2001; Goodman, 1988; Hatton & Smith, 1995; Huberman, Grounauer, & Marti, 1993; Motari, 2012; Noddings, 1986; Vagle 2010, 2011; Van Manen, 2015), to case studies of individual teachers’ practices (Grossman, 1990; Lampert, 2001).

The strength of these studies lies in their ability to acknowledge and analyze the complexity of teaching practice and their ability to sensitize practitioners to the nuances of educational processes.

Epistemically, interpretivism is representationalist. It seeks to provide: (1) an accurate representation of the social and personal significance that educational processes have for the people they affect; and (2) an account of how that meaning in turn shapes continuing educational practices. Ontologically it is foundationalist. It presumes there is a real world that researchers should strive to represent as comprehensively and accurately as possible. This real world is in effect the foundation of our knowledge claims. While interpretivist research may not always aim towards generalizability and universal truth, it does presume that there are real meanings of teacher and student experience that scholars can reveal. Scholarly debates within this philosophical framework focus primarily on who has better descriptions of teaching and teacher education – in all of their contextual complexity – where better descriptions are presumed to lead to improved practice and outcomes for students.

**Positivism and Post-Positivist Research on Teacher Education**

Positivism refers to an epistemological stance that defines knowledge as only those assertions which can be positively verified or at least falsified (post-positivism) by
the evidence of our senses and logical deduction from that evidence. Positivist philosophy emerged historically in the early 20th century as a response to the limitations of interpretivist approaches to social analysis.²

Positivism and post-positivism received one of their earliest and clearest expressions in teacher education scholarship among the process-product researchers of the 1970s and 1980s (Gage, 1989, 2009). This genre of research focused on identifying teacher behaviors, teaching strategies, and curricular designs (processes) that were reliably correlated with measurable improvements in student learning outcomes (products).

More recently, positivist conceptions of education inquiry have been encoded in the public policy of some nations, such as the 2001 No Child Left Behind legislation in the United States that limited federal funding to only those educational interventions that could show significant impact using experimental designs that included randomized controlled trials. A list of these interventions was collected in a US federal brokerage entitled the ‘What Works Clearing House’ (NCEE, 2014). New Zealand set up a similar, though less narrowly constrained, brokerage site entitled the ‘Best Evidence Synthesis Programme’, as has Denmark, the United Kingdom, and other Organization for Economic Co-operation and Development nations (OECD, 2007).

Positivist programs of teacher education research differ considerably from interpretivist programs in the questions they ask, their conceptions of data, and the way they draw inferences from data. However, at a rudimentary philosophical level, their premises are similar. Positivist programs of research are focused on the generation of accurate representations of educational processes. Ontologically, positivism is, therefore, also foundationalist, because it assumes knowledge claims are founded on a privileged access to reality. Positivism is characterized, however, by a Spartan ontology, committing to the reality of educational observations if and only if they can be scientifically confirmed.

**Critical Theoretic Research on Teacher Education**

Critical theory is a tradition of social analysis developed in the 1930s at the Frankfurt School in Germany, in response, in part, to specific limitations of interpretivist and positivist social science (Jay, 1996). Critical theory expanded upon these approaches to social inquiry by examining the influence of power on both individual experience and the very standards of rationality being used in scholarly processes of interpretation. Critical theorists argued that certain academic traditions of knowledge actually serve to obscure, as opposed to reveal, the causes and reality of human suffering through the limited way they frame what counts as relevant questions for social science and what counts as relevant evidence.

Critical theory has been applied to research on education in a number of ways, most notably in the critical ethnographic literature (Anyon, 1997; Fine,
1991; Levinson, Foley, & Holland, 1996; Willis, 1981), critical curriculum studies (Apple, 2004; Counts, 1978; Freire, 2011; Pinar, 2012; Weis, McCarthy, & Dimitriadis, 2006), and critical pedagogy literature (Darder, Baltodano, & Torres, 2009; Giroux, 2011; Grande, 2015; McLaren & Kincheloe, 2007). Critical theory has also been applied directly to research on teacher education (Kincheloe, 2012; Liston & Zeichner, 1991; Zeichner, 2009).

Critical scholarship on teacher education, although often using similar forms of data and logical inference, is epistemically distinct from positivism and interpretivism. The purpose of its analysis is not only to represent existing educational processes, but more importantly to critique the contradictions in taken for granted views of education and educational research that block the path to socially transformative action. This project of transformation, however, retains the most fundamental ontological commitments of positivism and interpretivism: critical scholarship on teacher education is foundationalist, in that its critiques are intended to pierce the obfuscating veil of ideology and permit a view of the real mechanisms of institutionalized oppression in schools. Its representations also lay claim to a privileged access to reality.

**Poststructuralist Research on Teacher Education**

Poststructuralist theory emerged in the 1970s and 1980s as a response to the limitations of critical theory. Adopting critical theory’s critique of rationality and taken-for-granted standards of evidence, and drawing on contemporary linguistic and semiotic theory (Derrida, 2006; Rosiek & Atkinson, 2005; Sarup, 1993), poststructuralism questioned whether rationality and objectivity could be rescued from ideological distortion. Rather than introduce critique as a means of clearing the way for truer descriptions of human affairs, it problematized the idea that a single authoritative description of human activities was possible or even desirable. Such skepticism was considered productive because, by the mid-20th century, history had shown that the discourses of enlightenment settler society rationality was as capable of underwriting sectarian violence as religious, ethnocentric, and nationalist discourses. Better to think from a position of ironic suspension, it was thought, than to watch the authority of one’s knowledge claims be used to underwrite the erasure, displacement, or genocide of others.

Poststructuralism inspired many forms of analytic practice, including genealogical studies (Foucault, 1995, 1998), deconstruction (Butler, 2006, 2011; Derrida, 1998, Derrida & Bass, 2002), postcolonial critique (Said, 1979; Spivak, 2006), and others, whose purpose was to generate a principled undecidability about our interpretations of the social.3 These modes of analysis have been applied to teacher education scholarship in a number of ways. They have been used to call into question narrow conceptions of the purpose of schooling (Kumashiro, 2002; Popkewitz, 2008), to problematize taken for granted conceptions of teacher competence (Atkinson, 2012; Iftody, 2013; Mazzei, 2007; Ryan, 2005; Zymbelas,
2005c), and to highlight the various forms teacher identity can take (Britzman, 1992; Jackson, 2001; Lanas & Kelchtermans, 2015; Zymbelas, 2005b).

Poststructuralism is epistemically similar to critical theory in that it is primarily a tradition of critique. Ontologically, however, poststructuralism is anti-foundationalist. It rejects the idea that representations of teaching and teacher education can be guaranteed by an exclusive relationship to the reality of teaching. Instead, poststructuralism frames social analysis as a performative act, one that positions audiences in a certain way, requiring them to adopt certain subject positions if our representations are to be legible. Different kinds of subject relations have practical and political implications that are themselves parts of educational reality. In this way poststructuralism calls for social scientists to acknowledge that our scholarship reproduces some forms of relations at the expense of others.

**Teacher Practical Knowledge Research**

The general philosophical frameworks just reviewed all share one thing in common. They locate the source of the most salient knowledge about teaching outside of the experience of teaching itself. Interpretivist scholarship offers that teachers could benefit from the insights gained from disciplined participant observation studies of student life and classroom processes. Positivist scholarship posits that teaching needs to be informed by inquiries conducted by scholars using rigorous scientific protocols. Critical theoretic scholarship begins with the premise that educators’ understanding of schooling processes are distorted by ideologies of which they are largely unaware. Correcting for this requires critical analysis that by definition has to come from outside of teachers’ already compromised professional experience. Similarly, poststructuralist scholarship regards all human experience as shaped by naturalized socio-cultural discourses. This condition, they allege, calls for a disciplined deconstruction of teaching experience – usually provided by university scholars – that sensitizes us to the socially constructed character of our understanding of educational processes.

These theoretical frameworks leave largely unexplored the kind of useful knowledge teachers can acquire from reflecting on the course of their own experience. In response to this lacuna, scholars of teacher education over the last three decades developed a research literature aimed at doing exactly that. Referred to broadly as teacher practical knowledge scholarship, this research has taken a variety of forms, such as case studies on teachers’ wisdom of practice (Grossman, 1990; Shulman, 1987) that applies traditional university processes of peer review and publication to identify and share useful insights arising from within teachers’ practice. Others advocated that teacher inquiry be guided by the needs of teaching practice, pursuing its own ends rather than the priorities of university-based scholars or state-level policy makers (Cochran-Smith & Lytle, 2009; Noffke & Stevenson, 1995). Still others maintain that teacher knowledge is simultaneously practical and personal, and offer a practice of narrative inquiry...
that both documents and helps teachers refine the complex weave of personal values, technical knowledge, and personal identity that enables their teaching (Chang & Rosiek, 2003; Connelly & Clandinin, 1990; Craig, 2004; Huber, Caine, Huber, & Steeves, 2013; Sconiers & Rosiek, 2000).

The epistemologies underlying these programs of research have varied, drawing from Aristotelian practical knowledge theory (Fenstermacher, 1986), Deweyan pragmatism (Clandinin & Rosiek, 2006; Schön, 1983), feminist theory (Hollingsworth, 1994; Taylor & Coia, 2014), and Freirean theories about social transformation (Kincheloe, 2012; Zeichner, 2009) to describe the nature of teacher knowledge and how it compares in utility to other sources of knowledge. Clear articulations of the relationship between these epistemologies and an underlying ontology of teacher practice, however, have been less common. Often they are implicitly foundationalist, suggesting that there is a definitive reality of teaching experience that can only be adequately represented through case study or narrative forms of representation (Clandinin & Connelly, 2000; Shulman, 1987). At other times, there appear to be anti-foundationalist process ontologies at work, leading scholars to suggest that the inquiry process itself is more important than any specific conclusions that emerge from those inquiries (Cochran-Smith & Lytle, 2009).

Where ontologies of teacher practical knowledge have been explicitly offered, they most often draw on pragmatist ontologies of experience (Clandinin & Connelly, 2000; Clandinin & Rosiek, 2006; Rosiek & Atkinson, 2005) which combine anti-foundationism and ethical realism, emphasizing both the malleability and continuity of experience. It is the emphasis on teacher experience as a source of knowledge that distinguishes teacher practical knowledge research from general qualitative or interpretivist research. Pragmatism’s focus on the necessity for all knowledge projects to seek their inspiration and ultimate justification in the qualities of ordinary experience has, therefore, made it particularly relevant to the teacher knowledge research literature.5

MOVING BEYOND AGONISTIC FOUNDATIONAL DEBATES

Clearly, the field of teacher education research is both philosophically diverse and robust. The primary project in this era of epistemic exploration has been to identify and defend the forms of knowledge that should be included in teacher education curricula. Conversations between advocates for different conceptions of teaching competence have most frequently taken the form of agonistic debates about which approach to inquiry on teacher education yields the most reliable, most comprehensive, and most valid representation of the knowledge that enables good teaching. The question that faces contemporary scholars and policy makers is how to deal with this diversity.

In the effort to defend the legitimacy of one conception of knowing, teacher education scholars have often felt compelled to impugn the utility of others.
Interpretivists critique the way positivist research ignores the influence of context and culture on student and teacher activity. Positivists critique interpretivist research for its lack of replicability and failure to produce scalable solutions to persistent educational challenges. Teacher educators influenced by critical theory critique both positivism and interpretivism for their failure to interrogate the way ideology influences the framing of educational inquiries more broadly. Those influenced by poststructuralism critique the failure of other traditions of research to recognize the irreducibly mediated nature of all truth claims in teacher education scholarship. Teacher practical knowledge researchers critique the scholarly habit of assuming teachers’ ways of knowing are primarily sources of bias that need to be displaced with more ‘rigorous’ research practices. Almost always we find conversations devolve into disputes about who has identified the best source of teacher knowledge.

This either/or logic of debates about epistemic merit has conspired against a sustained pluralist approach to teacher education, one that reflects what the best teacher education scholarship seems to show—that there are a variety of important forms of knowledge that teachers need in order to serve students well. It is not enough, we offer, to try to get teacher knowledge ‘right’. We need to take responsibility for how our conceptions of knowledge often serve to predetermine the educational ends we seek and achieve. This influence on our educational goals and actions ultimately affects students’ lives.

What is needed, we offer, is a simultaneously philosophical and empirical analysis of how applying different epistemic frameworks to teacher education policy and practice generates different material and experiential consequences in schools and communities. What type of relations between students and subject matter do they enable – not just effects on student test scores, but on affective experience, ethical relations to other students, the environment, and the community? What types of teacher–student relations do our conceptions of evidence and curriculum enable or inhibit? What types of parent–teacher relations do they enable or inhibit? What types of citizen-subjects do they produce? What kinds of social stratification do they reduce or intensify? What possibilities for personal transformation and social amelioration do they open up or foreclose? Our ways of knowing about schools, teachers, and students are ontologically generative – they influence our ways of being in schools and with each other – and it is on this basis that they can and should be compared.

Such an approach to teacher education research would not promise some new transparency that could form the basis of a new totalizing policy consensus, nor would it assume the desirability of a single ideal outcome for education. Both choosing and knowing are forms of actions, producing consequences that are not identical to envisioned ideals and for which we remain ethically responsible. What is needed is a reconstruction of the notion of accountability in teacher education research that includes taking responsibility for these broader consequences of our ways of knowing and acting.
NEW PHILOSOPHICAL RESOURCES

This onto-ethical turn is already underway in the general social sciences. Having grown weary of well-rehearsed foundationalist debates about discursivity vs materialism, relativity vs realism, constructivism vs naïve empiricism, social theorists in a variety of areas of study have developed or reaffirmed philosophical frameworks that place the ontology and ethics of inquiry at the center of research design discussions alongside epistemic considerations.

Perhaps the most visible of these at the moment is the new materialism being forwarded by scholars such as Karen Barad (2007), Bruno Latour (2013), Vicky Kirby (2011) and Rosie Braidotti (2013). An adequate review of this compelling literature is beyond the scope of what remains of this chapter. Suffice it to say here that the new materialism embraces the poststructuralist notion that our representations of reality are in principle editorial and therefore cannot achieve totalizing epistemic authority. However, they reject the poststructuralist emphasis on the linguistic mediation of our relationship with reality. The emphasis on linguistic mediation, they offer, leaves our inquiries focused on discourse and neglects the material obduracy of things. Our representations of the world, according to these philosophers, are better thought of as instruments of ‘intra-action’ that put us in relation with the materiality of the world in particular ways. The world, rather than being thought of as a passive object awaiting a single accurate representation, is instead framed an active agent that comes to meet us half-way in our inquiries (Barad, 2007). Our inquiries can thus produce valid representations of the way reality intra-acts with specific study designs. However, other inquiry designs can produce, different – even contradictory – representations of reality that are equally valid. Reality, in other words, is both materially substantive and protean, and will always exceed our ability to represent it in any single way.

Karen Barad (2007) uses modern quantum mechanics as her primary illustration of why this return to metaphysics is necessary. Citing Bohr’s famous diffraction grating experiments, she focuses our attention on its ontological implications. If the diffraction grating experiment is set up in one way, we intra-act with light as a particle. If it is set up another, we intra-act with light as a wave. We cannot, however, do both. This is not a failure of triangulation; light changes in response to the way we measure it. This principle of ontological exclusion has been tested and confirmed repeatedly by physicists (e.g. Jacques, Wu, Grosshans, Treussart, Grangier, Aspect, & Roch, 2007; Manning, Khakimov, Dall, & Truscott, 2015). The implication, according to Barad (2007), is that our inquiries don’t reveal a single reality passively awaiting our discovery. Instead the way we design inquiry involves us within a dynamic reality in a particular way. It establishes material relations that could be otherwise. The relevance to contemporary education research conversations is not hard to discern. We can measure educational success through the use of high stakes mandatory standardized tests, and this will
reveal something real about student learning. Relying primarily on these tests to inform curricular decisions will also alter the conditions of schooling in a variety of ways. We can similarly measure educational success at a more local level, using criterion referenced portfolio assessments designed to fit what is being taught in a particular classroom or school. These assessments will also reveal something real about student learning, and relying upon them will alter the conditions of schooling in a variety of ways. Real education happens either way. The question is not: which is right or which is real? The question is: what value do we find in the educational intra-actions made possible by these different ways of knowing? And how do these modes of inquiry differently position the myriad of stakeholders involved in educational processes.

These philosophical ideas are not as new as the phrase ‘new materialism’ suggests. Similar themes have been explored in the field of Indigenous studies for a very long time. Indigenous studies scholars have spoken and written about how different ways of knowing establish different ontological relations since time immemorial, and certainly since indigenous studies was established as an academic field (Bunge, 1984; Deloria, 2012; Garroute, & Westcott, 2013; Watts, 2013). Similar themes have also been developed in the work of postcolonial scholar Sylvia Wynter (McKttrick, 2015) and they are present in pragmatist philosophy. In his essay ‘The Development of American Pragmatism’ John Dewey (1931) wrote of our inquiries as being not merely a form of discovery, but instead a form of ontological transformation.

Pragmatism thus has a metaphysical implication. The doctrine of the value of consequences leads us to take the future into consideration. And this taking into consideration of the future takes us to the conception of a universe whose evolution is not finished, of a universe which is still, in James’ term ‘in the making,’ ‘in the process of becoming,’ of a universe up to a certain point still plastic.’ (p. 33)

Of particular note for our purposes is the revisionist scholarship in pragmatist philosophy that has seen the inclusion of Harlem Renaissance intellectuals such as Alaine Locke and W.E.B. Dubois and early feminists such as Jane Addams and Mary Parker Follett in the pragmatist cannon. These more politicized scholars, in their efforts to leverage social change of various sorts, explored more thoroughly the material and experiential consequences of our conceptions of valid knowledge (McKenna & Pratt, 2015; Pratt, 2002; Seigfreid,1996; West, 1989).7

A NEXT GENERATION OF TEACHER EDUCATION SCHOLARSHIP

The influence of these philosophical developments are already being felt in teacher education research. In a parallel fashion, many teacher education scholars have grown weary of well-rehearsed foundational debates in our field about reflective practice vs scripted instruction, critical pedagogy vs subject matter
mastery, teacher inquiry vs teacher-proof curriculum. As a result, they have begun refusing these well-worn epistemic binaries and have turned their attention to the ontological consequences of taking up particular conceptions of teacher knowledge in particular settings. The search is on for new (or perhaps old but long overlooked) philosophical frameworks that can support a pluralistic analysis of these various consequences.

Because John Dewey is a canonical figure in education scholarship, some versions of this turn to ontology have long been latent in the teacher education research that draws on Deweyan pragmatism. Dewey’s (1994, 2007) ontology of experience, for example, was cited as the justification for Donald’s Schön’s (1983) concept of reflective practice. The tradition of narrative inquiry in teacher education, which draws on Dewey’s philosophy, takes the transformation of teachers’ ontological relation to the practice of teaching to be the purpose of their research (Clandinin & Connelly, 2000; Clandinin & Rosiek, 2007; Craig, 2004). The work of other pragmatists such as Charles Sanders Peirce, William James, and Jane Addams has likewise been used to raise questions about the ontology of teacher education research (Atkinson, 2013; Rosiek, 2013a, 2013b; Rosiek and Atkinson, 2005).

Scholars at the University of Auckland in New Zealand and Boston College in the United States have recently advocated for the use of a synthesis of complexity theory and critical realism for conducting research on teacher education that ‘preserves wholes, privileges interactions and interdependencies, and expects surprising outcomes’ (Cochran-Smith, Ell, Ludlow, Grudnoff, & Aitken, 2014, p. 33). Complexity theory emphasizes the danger of overreliance on epistemologies and research designs that seek to compartmentalize salient aspects of teaching at the expense of attending to the complex interactions of multiple influences on teaching. Critical realism complements this by enabling scholars to highlight real cause and effect relationships within the complexity, thereby providing an ‘ontological underpinning of complexity most consistent with the important questions posed by teacher education research’ (p. 16).

Keffrelyn Brown (2013) has offered a persuasive critique of the tendency of teacher education scholars to advocate for curriculum about student culture ‘without understanding and seeking to challenge the epistemic, ontological, and structural reasons for doing so in the first place’ (p. 329). Drawing on Sylvia Wynter’s (McKittrick, 2015) writings on the social ontology of colonialism and Ian Hacking’s (2004) work on historical ontology, she points out how certain conceptions of knowledge intended to enable culturally responsive teaching actually contribute to reproducing the oppressive reality Black students face. She calls for going beyond a single epistemology of teaching, and instead preparing teachers to ‘navigate between clear bodies of knowledge … [and] to address the shortcomings/biases of official school curriculum while drawing from the strengths, beauty and knowledge that all students bring with them to school’ (p. 332).

Indigenous studies scholars have written about what teacher education can learn from traditional Indigenous approaches to teaching. Prominent among the
themes in this growing literature is the way our epistemologies of practice ontologically transform both teachers and community relations. Bryan Brayboy and Emma Maugham (2009) write ‘individuals live and enact their knowledge and, in the process, engage further in the process of coming to be – of forming a way of engaging others in the world’ (pp. 3–4). In a recent review of the growing indigenous studies scholarship on teacher education, Brooke Madden (2015) concludes that explicitly engaging the need to prepare teachers to serve Indigenous communities can work an analytical transformation on teacher education scholarship.

Tracing a fulsome network of Indigenous education with respect to faculty education may provide analytical frames to examine how pathways shape teacher identity and teachers’ constructions of Indigeneity and (de)colonization; what subject positions are produced and prohibited by particular pedagogical pathways? (p. 13)

Finally, the aforementioned new materialist philosophies are being taken up by teacher education scholars (e.g. Lanas et al., 2015; Phillips & Larson, 2013; Rath, 2015), who are emphasizing similar themes. Drawing on Bruno Latour’s and Karen Barad’s philosophy of science, David Mulcahy (2011) asks of teacher educators ‘What if multiple knowledges reflect not only varying positions but, in certain situations, a multiple ontology?’ (p. 99). In such circumstances the fundamental question for teacher education scholars is not whether we have represented teacher education accurately, but how our standards of knowing about teacher education produce certain ways of being in schools and communities. Following a similar logic, Kathryn Strom (2015) draws on the new materialist philosophies to call for ‘an ontological turn in teacher education research’.

In our current climate of reforms driven by market logic, methodological frameworks, such as those featured in this study and beginning to be used by other educational researchers (e.g., Fenwick, Edwards, & Sawchuk, 2011), move the focus from ‘outcomes’ to the actual ontology of practice. That is, these new lenses and tools turn our attention to the processes through which outcomes are produced.

The emerging trend being pointed to here crosses a variety of disciplines and communities of inquiry. As such there are notable differences between the way they take up the concept of ontology and the aspects of teaching to which it is applied. What they share in common is a frustration with epistemological debates that encourage an oversimplification of teaching practice by encouraging efforts to identify one right or best form of teacher knowledge. Instead, these scholars focus on teacher education research as ontologically generative and on how we need to be answerable (Patel, 2015) for the holistic consequences of our ways of knowing.

TEACHER EDUCATION FUTURITIES

What we see here, we offer, are the early signs of a broad, multidisciplinary shift in the philosophy of teacher education scholarship. While the earlier emphasis on
epistemology transformed and diversified the field in important and exciting ways, the exclusive reliance on epistemological arguments to defend this pluralism has proven problematic. Although the conceptions of teacher knowledge circulating in the field became more diverse, the overall conversation remained organized around the ideal of identifying the most accurate or most important knowledge for teachers to have. Debates about which forms of teacher knowledge matter most can become degraded when political pressures force a framework of efficiency on conversations about teacher education research — limiting conversations to focus only on educational outcomes that can be measured reliably and economically.

The turn to ontology being discussed here is not an effort to return to an old-fashioned metaphysical debate, to move from debating what the single best ‘truth’ of teacher education is to a debate about what the single ‘reality’ of teacher education is. That would just be trading one Procrustean foundational debate for another. Instead, it reflects an emerging collective sense that we need to pay closer attention to the ontological effects of the conceptions of ‘truth’ and ‘knowledge’ that we adopt. These include the causal effects of the kinds of pedagogy our research recommends, the socially reproductive effects of the kinds of questions we ask, the subject producing effects of our research, and more. Additionally, because these effects are effects on other people, this consideration is inherently an ethical and political one as well.

This onto-ethical turn does not displace previous developments in the philosophy of teacher education research. Instead it builds on what is best in that literature and attempts to marshal analytic resources to give greater scope and influence to the epistemic pluralism already established in teacher education scholarship and well represented in the pages of this Handbook. As we look to the future of teacher education research, we see the familiar challenges of deprofessionalization, defunding, stratification of opportunity, and an underestimation of the complexity of teaching practice in policy discussions. However, we also see new theoretical developments that have the capacity to usher in a second renaissance of teacher education scholarship. These developments hold the promise of providing new more comprehensive conceptions of educational accountability, ones that move beyond narrow forms of measurement and help us attend to the overall quality of the experiences we provide students and the kind of people and communities our teachers can help us to become.

Notes
1 See also Suzanne Wilson’s (2014) review of the economic theories behind the current wave of market-based reforms.
2 However, in the field of education, interpretivist programs of research are often thought of as having emerged in the late 1960s and early 1970s as a response to the limitations of process-product approaches to education research. As a consequence, the differences between interpretivism and positivism are often emphasized in the field of education, and their common philosophical roots are often overlooked.
3 There are different opinions about whether these forms of analysis should be called ‘methodologies’ because that term is often thought to refer to the means used to produce substantive knowledge claims. We use it here in the broader sense of referring to any practice of analyzing the significance of personal and social phenomena.

4 Interpretivism, for example, positions educators as spectator subjects who can view teaching as embedded within a network of social relations. Positivism similarly positions educators as spectator-subjects, in this case viewing teaching through the lens of particular metrics of success and failure. Critical theory positions the reader as a co-conspirator in projects of social transformation. Poststructuralist analysis positions its audience as cosmopolitans who view definitive claims about educational realities and ideals with ironic suspicion.

5 More will be said about pragmatic ontologies of experience in the later sections of this chapter.

6 Indigenous studies scholars have pointed out that calling these ideas ‘new’ is a form of colonialist erasure that is continuous with ongoing processes of cultural genocide with which western scholars have long been complicit (Tuck, 2015).

7 For an outstanding and comprehensive summary of this revisionist view of the pragmatic philosophy canon, including an emphasis on inquiry as an ontologically transformative process, see Erin McKenna and Scott Pratt’s recently published book American Philosophy: From Wounded Knee to the Present (2015).

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