

DUO-CURRERE: NOMADS IN DIALOGUE (RE)SEARCHING FOR POSSIBILITIES OF PERMEABILITY IN ELEMENTARY SCIENCE TEACHER EDUCATION

By Maria F. G. Wallace

Millsaps College

& Christie C. Byers

George Mason University

September 29, 2017: So yesterday I spent the day with Ulmer's Writing Slow Ontology, and...I woke up today, from a dream, with ideas flowing out about what our [Bergamo] presentation might be: an audio file of voices from texts, advisors, etc., on what we've been told ought to be (with corresponding structured/progress sounds of construction, beeping timers, ticking clocks) and then moving to the voices of the possible you and I have imagined together as well as collected in our readings, interactions with students, etc. This time the background sounds are birds and wind and water—embracing slowness.... But, is that too crazy? (Christie, Email Exchange, 9-29-2017)

Given the messages we have received regarding the bounded, dense, and taken-for-granted structures and assumptions surrounding how one *ought to* become an elementary teacher, how one *ought to* learn and teach science, and how one *ought to* conduct research in elementary science teacher education, we, as new and nomadic (St. Pierre, 1997a) science education researchers and science teacher educators, on separate yet intersecting pedagogical and methodological journeys, searched for possibilities of permeability (POP) within those structures. The framework of *currere*, reconceptualized as an entangled, relational, and fluid duo-*currere*, opened up new spaces for imagining a more liberatory approach to elementary science teacher education. Rather than reinscribing elementary science teacher education as an epistemological project, we examined our “lived embodied experience that was structured by the past while focused on the future” (Pinar, 2017, p. 1) to highlight moments of ontological possibility. Informed by feminist poststructuralism and guided by duo-*currere*, we began to consider our practices and “complementary being” so that we might imagine myriad entries *and* exits for engaging elementary science teacher education anew. The purpose of this paper is to allow the reader a glimpse into the possibilities made thinkable through our overlapping duo-*currere* journey(s).

STRUCTURES OF SCIENTIFICITY SHAPING SCIENCE TEACHER EDUCATION

Among multiple messages of oughts and shoulds, pre-service elementary teachers (PSETs) are often deemed in need of proper scientific content knowledge. This can be seen in undergraduate teaching methods courses that focus more on *re-teaching* prevailing scientific knowledge (Smith, 2000). For example, many undergraduate elementary science methods courses often frame their preparation around ideas of “science content enrichment” and/or developing pedagogical content knowledge

Wallace, M. F. G., & Byers, C. C. (2018). Duo-*Currere*: Nomads in dialogue (re) searching for possibilities of permeability in elementary science teacher education. *Currere Exchange Journal*, 2(1), 59-68.

(Schneider & Plasman, 2011). The following represents one common narrative contextualizing the preparation of elementary science teachers:

I want my students [PSETs] to construct conceptual understanding of substantive scientific ideas (Schwab, 1978) in at least one area of science during the course.... For many of my students [PSETs] this will be the first time they have deeply understood any scientific ideas. In addition, I want them to know about the *form* of important scientific ideas as well as knowledge of those ideas.
(Smith, 2000, p. 28)

Given the capitalistic, patriarchal, and racialized epistemological and ontological messages embedded within “substantive scientific ideas,” PSETs receive and are expected to reproduce problematic and often incomplete images of science. Thus, PSETs implicitly and explicitly reproduce Foucauldian “scientificity” in elementary classrooms. Scientificity speaks to “science [as having] an ideological function” (Lather, 2010, p. 60); therefore, we see how there is a form of “stickiness” within PSET science preparation—for example, the reproduction of a strict, lockstep, scientific method, even though it may not represent authentic practices of scientific inquiry. With this dominant narrative of science percolating throughout educational policy and science education, science teachers are wedged within a particular regime of scientific truths: (a) performing a particular kind of “effective science teacher” positionality; (b) maintaining an image of “effective science teacher” informed by dominant perceptions of scientific methodology; and (c) imparting historical traditions of scientific knowledge. Through Scientifically Based Research (SBR), a particular kind of science is made to function as a regime of truth (Vancleave, 2012) and, thus, makes others’ ways of being or even engaging in science unintelligible and delegitimized. SBR, among other regimes of truth in elementary science teacher education, maintains the “scientific” reproduction of PSETs. Thus, scientificity is resignified as a constitutive property of “good” and “effective” education (Lagemann, 2000). Like the broader field of education—be it research practices, “valid” measurement of PSETs’ capabilities, or the imposition of one, “true/right” path for elementary science instruction, PSETs and their practices are regularly subjected to the norms of over-coding prescribed by dominant assumptions of what elementary science teachers *ought to be* (or become).

ENGAGING NOMADIC INQUIRY AS PRACTICE IN SCIENCE TEACHER EDUCATION

To avoid over-coding and, thus, reterritorializing (Deleuze & Guattari, 1987) what and/or who PSETs *ought to* become, alternative modes of theorizing experience and knowledge construction in elementary science teacher education are needed. Being nomadic (St. Pierre, 1997a) entails a keen emotive and conceptual awareness of the striated and smooth spaces that shape our ontological underpinnings. Deleuze and Guattari explain that “striated space is sedentary space, space that is coded, defined, bounded, and limited” (as cited in St. Pierre, 1997a, p. 369). Striated spaces are always-already present within institutionalized entities like teacher education, the process of K-12 schooling, and research methodology. Striated spaces overcode possibility, while movement within smooth spaces is “perpetual, without aim or destination, without departure or arrival” (Deleuze & Guattari, 1987, p. 353). Yet, St. Pierre (1997a) explains that striated and smooth spaces do not exist in opposition to one another. Smooth and striated spaces are not divisive, but rather a heterogeneous terrain shaping the landscape of being *and* practice within elementary science teacher

education. Herein lies the productivity of being *and* becoming nomadic elementary science teacher educators.

Being nomadic and enacting a nomadic inquiry generates possibilities of permeability (POP). Permeability (defined by dictionary.com as the state or quality of a material or membrane that causes it to allow liquids or gases to pass through it), embraces the possibility for fluid ontologies and epistemologies to thrive in elementary science teacher education. In seeking out POP, PSETs are enabled to shift their beings *and* practices from assumptions of *lack* to assumptions of *abundance* (Wallace, 2018). Notably, ontologies of abundance reveal immense opportunities for ways elementary science teacher educators and PSETs might intentionally weave POP into their practices (i.e., research methodologies and/or teacher education). Given that nomadic inquiry is typically put to work in the context of qualitative inquiry (St. Pierre, 1997a), our study resides in a state of nomadism with/in our practices as elementary science teacher educators. We believe that elementary science classrooms and teacher education programs are always-already nomadic spaces, and there exists rich, unexamined POP within and between them.

After an initial, chance meeting, we, Maria and Christie, began to re-inhabit and re-imagine these spaces together—our intertwining nomadism and (what we realize when looking back now) our entangled duo-*currerian* journeys allowing us to dream differently together. We came to see our nomadism as a shared multi-temporal event. We came to feel *currere* as duo-*currere* and its focus on temporal movements as nomadic.

NATURE OF OUR (RE)SEARCH FOR POSSIBILITY

Over the course of one year, we became "pen pals" with one another. Both working with PSETs in an array of different geographical and institutional contexts, we followed our mutual yearning to think about elementary science teacher education in terms of what might be. In our conversations (verbal, written, and emotive), we came to realize the inherent entanglements (Barad, 2007) between our research and practice with PSETs. We began sharing student artifacts, interview transcriptions, autobiographical stories, and written reflections to support and challenge one another in our quest for POP. Throughout this process, we both noticed and often commented on what felt like an emotive and empowering momentum unfolding and growing between us. Riding this joyful wave of energy, we made a plan to come face to face again and share our journey with others in the supportive environment at the Bergamo Conference on Curriculum Theorizing. As we physically read and re-read ourselves side-by-side, we realized that we were re-engaging a sense of living some *thing* and some *one* that is not quite yet (Greene, 1995). It was there, sitting at the Bergamo presentation table, that we again became nomadic. With the keen insight of removed onlookers, we were prompted to witness our nomadic inquiry *as* always-already *currerian*.

MEET MARIA

As an undergraduate, liberal arts, geology, and education student, I pursued a career into elementary and middle school science education. Teaching third through sixth grade science in both public and charter schools, I continuously found myself within a complex assemblage of external and internal forces (i.e., striated spaces). Even so, I had found a way to foster a fluid elementary science teaching practice. I was able to appease the striated spaces that sought to define who I was and how I *ought to*

teach science, while also seeking out moments that illuminated the always-already capabilities of my science students. During doctoral education at a large public university in Southeastern United States, I designed and taught an undergraduate elementary science methods course from the perspective that becoming-teachers must engage difficult questions that I could not answer for them. We worked together to find ways of maneuvering the inherent, striated constraints shaping their identities *and* practices, whether they knew it or not. At the same time, I was finding myself as a researcher who rejected the mere re/production of beginning elementary teachers as an epistemological project with clear inputs and outputs.

MEET CHRISTIE

As a former elementary teacher for nearly twenty years, I focused on observing, listening to, and responding to children in order to open up space for their ideas and ways of being in science. Working within independent school contexts, I felt the freedom to navigate between smooth and striated spaces alongside the children, and we structured the classroom environment together. After transitioning into a position of teacher educator and, later, doctoral student and science education researcher at a large Mid-Atlantic university, I realized that traditional elementary science teacher education environments and science education research approaches are more bounded and structurally constrained than I was accustomed to. I found myself struggling, pushing back, and searching for permeability—attempting to make room for the ideas and views of students, of PSETs, and me as an educator and researcher, that I knew in my heart were rich and generative. In my current research, I highlight connections to emotion, wonder, aesthetics, and critical reflection on self and subjectivities as transformational possibilities within education contexts. I imagine a feminist-inspired dissertation project tracking the journey and relationships of a small group of women: new elementary teachers, and me, as a new science education researcher, co-writing our journey, rendering one another capable (Haraway, 2016), as we illuminate and navigate external structures and search for POP together.

DOING DUO-CURRERE

As nomads on display at Bergamo, we felt (while others watched) ourselves living out Pinar's (1978) autobiographical inquiry referred to as *currere*. While the room with about 15 attendees watched and listened, we found ourselves “sketch[ing] [our] relations among school knowledge, life-history, and intellectual development in ways that might function self-transformatively” (Pinar, Reynolds, Slattery, & Taubman, 2008, p. 515). In seeking out ideas for elementary science teacher education, we developed a nomadic relationship that prompted a form of nomadism (St. Pierre, 1997a) among *currere*'s regressive, progressive, analytical, and syncretical stages of autobiographical inquiry.

Currere is more than reflective autobiographical inquiry; it is a lived endeavor that charges the soul to carefully interrogate a complex narrative of the self. When “doing *currere*,” a single author is typically the central participant, yet the text produced always entails a relationship to other entities (i.e., humans and nonhumans). As such, perhaps curriculum scholars might also imagine a duo-*currere*. If one of the virtues of *currere* is to function “as a kind of self praxis” (Baszile, 2017, p. vii), what might become thinkable when a *currerian* intentionally partners with another self—that is, in concert with multiple selves, to re-read modes in which curricula make and unmake ourselves *and* our practices. In this paper, we share the ways in which we found ourselves engaging each of the four moments of *currere* outlined in Table 1.

Four Stages of <i>Currere</i> (Baszile, 2017; Pinar, 1978 & 2012)	Our Four Mo(ve)ments of Duo-<i>currere</i>
Regressive An individual re-members and reflects.	Regressive <i>We</i> re-member and reflect both singularly and in relation to another’s reflexive re-membering.
Progressive An individual contemplates desires and fantasies of the future.	Progressive <i>We</i> contemplate <i>our</i> desires and fantasies of the future, both singularly and in relation to another’s fantastical desires.
Analytical An individual considers the significance of past experiences and future desires in terms of the historical social, cultural, and political contexts through which they emerge.	Analytical <i>We</i> consider the significance of <i>our</i> past experiences and future desires in terms of the historical, social, cultural, and political contexts through which they emerge.
Synthetical An individual synthesizes thinking across these moments as a way to purposefully engage a process of learning and re-learning toward more just futures.	Synthetical <i>We</i> synthesize [and see] <i>our</i> thinking across these moments, both singularly and in relation to another, to purposefully engage a process of learning and re-learning toward more just futures.

Table 1: *Currere* and Duo-*currere*

The primary difference between our *duo-currere* and a single authored image of *currere* was the dialogic and emotive conversation that occurred with/in the lived experiences of another: another human, another relationship, another geographic location, another self, another image of time. We float(ed) through the folds of *currere*, together. Like nomads—nomads in dialogue.

Pinar’s (1975) original presentation of *currere* was introduced as a method. Forty-one years later, during a presentation at Louisiana State University’s Curriculum Theory Project conference, Pinar (2016), when pressed to consider *currere* as either a method *or* act of study, he reaffirmed *currere* as “a method.” As feminist scholars working in the field of science education, we often “wrestle with the epistemological dimensions of domination” (Baszile, 2015, p. 120) percolating throughout K-12 science teacher education and research on science teaching. Consequently, we maintain a feminist engagement with *currere* by embracing four fluid mo(ve)ments (i.e., rather than four stages) of Pinar’s (1978) method of *currere*. For us, *duo-currere* made POP in science teacher education thinkable. Embracing *duo-currere* as living within the fold (St. Pierre, 1997b), *currerians* might engage the practice of *currere* and field(s) of inquiry as also examining multiple selves.

POLYVOCAL SPACES FOR ENGAGING SCIENCE TEACHER EDUCATION ANEW

As multiple selves, we are on a journey looking and listening for possibilities of permeability (POP) in elementary science teacher education. Although we (i.e., Christie and Maria) had only physically met once, nine months prior to our first co-presentation at Bergamo 2017, we remain connected through alternative modalities.

Be it video chat, emotion, pen pal exchanges via emails, cellular text messages, and sounds unique to our transnational dialog, we continue to engage one another as we seek out POP in research and elementary science teacher education. In our (re)search for possibility, we have become well-attuned to Deleuze and Guattari's (1987) striated and smooth spaces and other feminist poststructural work by St. Pierre (2000) and Lather (2007). Similar to our presentation at the Bergamo Conference on Curriculum Theory, we share our exploration for POP as a polyvocal engagement with *currere*, or rather what we refer to as a duo-*currere*. Specifically, accompanying this article, we include a few brief audio recordings that triggered and continue to trigger some kind of emotive response, juxtaposed with pieces of our personal correspondence and/or nomadic engagements affecting our being in this world as elementary science teacher educators. Our relationship and sharing of "data" often includes bits of dreams, emotions, sensory images, and responses to one another's thoughts. Through the use of this transgressive data (St. Pierre, 1997b), it is our hope to illustrate and illuminate the striated and smooth spaces in which we all are always-already entangled.

VOICE ONE

Go to this site (<http://bit.ly/2zKhtXW>)¹ to play a corresponding audio file that includes sounds of nature alongside an airplane taking off in the background.

March 9, 2017: This truly is beautiful and makes me really happy.... An element that strikes me as different here, in this new smooth space, is how poetic your words are, how poetic St. Pierre's words are.... I think this is something that matters in this post-qual world we are inhabiting, or trying to inhabit, or becoming: I think a place that I belong, I might find home? Your typical scientist is not a poet. Your typical "scientific" thinker is not thinking poetic thoughts, or if they are, they are not connecting them to the intellectual work of "science"—so maybe this is why this territory is relatively new, or seems uninhabited...but what an opportunity!! (Christie, email exchange)

CHRISTIE A LA CURRERE. In my response to Maria here, I refer to the striated space of typical science or as Lather discusses, the "scientificity" and hegemony of a monolithic way of knowing, but I am noticing the poetic, more fluid language of our email correspondence, as well as some of the scholars we read, like St. Pierre. Even in our smooth spaces, however, there exists the presence of the striated—the sound of the plane, the progress, amidst the sounds of birds and crickets—the heterogeneous terrain shaping the landscape of being and practice that St. Pierre refers to.

MARIA A LA CURRERE. I am about to listen to the sounds again and wonder, what will I feel? The computer application intended to play the audio file bounces up and down in the background, as if it saying "hurry up, open me, I have something to say!" The audio file begins to play, and I immediately calm down. I no longer feel pressure to keep up with the striated pace yelling in the background. But, something happens as it always does—something I did not expect. The nature audio file ends abruptly, and my computer application transitions to the next audio file randomly listed on my computer. It is my first conversation with one of the participants in my dissertation from a year ago. Again, my research stories with others become entangled with Christie. What now?

VOICE TWO

Go to this site (<http://bit.ly/2jr1rHn>) to play a corresponding audio file from inside an airplane while the flight attendant explains the procedures for getting an oxygen mask.

March 29, 2017: I still have internal conflicts about providing so many specific expectations in my rubrics, but what I tried to do is make all of my grading materials and syllabus up for discussion through Google Drive. For example, the entire class had the ability to raise questions and make suggestions about any of the documents through Google comments. There were also some assignments where they actually contributed to the “groundwork” of their own lesson plan rubric. (Maria, email exchange)

MARIA A LA CURRERE. Placing the airplane audio clip and my email excerpt alongside each other causes hesitation. Both narratives illuminate striated and smooth spaces for survival—be it in an airplane crash or in the classroom. For elementary teachers and students, survival often means merely getting through the day. Yet, the work of teachers also exceeds merely breathing (as discussed in airplane safety instructions). In doing so, we begin to see how striated and smooth spaces create livable and unlivable lives.

CHRISTIE A LA CURRERE. As experienced educators, we know that these “becoming” teachers will encounter many striated, bounded spaces in the future; I see that what Maria is doing here offers a hopeful POP, through the co-creation of those boundaries based on the needs and resources of the learner. What a beautiful example of honoring the spirit and abundance each teacher will bring to her own classroom—the oxygen mask they will need in times of turbulence.

VOICE THREE

Go to this site (<http://bit.ly/2ACQMEM>) for a corresponding audio file with the sounds of Bergamo Conference Center.

September 25, 2017: I wonder about the connections between nomadism, wonder, flow, allowing expression of this “core”—snail embodiment...mindfulness? There is a space we enter that feels different somehow, and I wonder if there are different brain wavelengths like those achieved in mindfulness, meditation.... So, what you are doing with future elementary teachers—helping them to see the structures they are working within—is fantastic! I agree this is where our work as teacher educators must begin.... This makes me wonder about the possibilities of doing this AND engaging them with that slowness through: wonder, through connection to that core, helping them to feel that flow, that (magical? nomadic? slow shimmery snail trail?) space where possibilities of creating a new ontology... are prolific.... Can these two pieces be combined somehow? How can we show this is not a waste of time? (Christie, email exchange)

CHRISTIE A LA CURRERE. Based on thinking about what Maria has said about the necessity of illuminating the constraining structures that exist within education, that will certainly exist for these becoming-teachers when they enter K-12 classrooms, I

mention the possibilities of also including wondering, meanderings, slowness, and connecting to a core—and thinking about ways these two things might exist together.

MARIA A LA CURRERE. As a teacher educator, I am beginning to embrace the generative spaces of slow silence in the classroom with pre-service teachers. I want to create a space where my undergraduate students find productivity in the stillness. “Teach with a sense of urgency!” “Teach like your hair’s on fire!” Rarely is a teacher told to slow down. Perhaps teacher educators might offer moments to find and follow a shimmery snail trail? Many times, teachers and teacher educators are asked, “Okay, this all sounds great, but what would this look like in the classroom?” Perhaps now (thinking with Christie), the more helpful question for educators might be: but, what would this *feel* like in the classroom?

VOICE FOUR

Go to this site (<http://bit.ly/2AEA5J0>) to listen to the corresponding audio file of a car’s navigation system provide driving instructions to a particular destination.

March 10, 2017: Yesterday I met with June for two and half hours. We talked. We laughed. We ate. We drew pictures of our “crazy” ideas. I left thinking... there is absolutely no way I can “code” her. It is too painful, and it is not what June would want. After much thought this week and last night...I’ve decided to “analyze” June and Samantha the way they would want to be “analyzed.” I will not overcode them into the same set of themes. It isn’t right to think I can even do so. Instead, I am going to just analyze Samantha’s experiences, artifacts, and conversations from conventional practices (Ethnography 1) and since my conversations with June are ALWAYS-ALREADY post-qual, I will “analyze/work with her” from a post-qual perspective (Ethnography 2).

Sorry for all the typos. My brain is currently mush! I have been in a such a smooth space for the past few days, my mind is flooded with so much that my fingers can’t keep up with my thoughts.

That’s all for now.

Have a good/troubling day! (Maria, email exchange)

MARIA A LA CURRERE. Research methods tell researchers where and how they ought to go to the get to a desired outcome. My navigation system provided clear instructions on how I *ought to* drive to register my engine-lacking car at the local salvage yard to be literally “pulled apart.” Ironically, the navigation system sent me to the wrong location, and then I had to follow my intuition to take me the rest of the way. Like the driving instructions, my dissertation research began with a proposal of what *ought to* happen for my committee, but then nothing happened as planned. The participants and I defaulted to nomadic inquiry.

CHRISTIE A LA CURRERE. I love how Maria responds to her own instincts here—the whispers to resist a traditional, expected, qualitative coding process that threatens to reduce June to something simple and mechanistic. Maria feels pain in the idea of pulling June apart, on a predetermined path to the salvage yard. Where is the space for one’s own instincts as a researcher? For the voice of participants? This inspires me in

my own quest for POP and imagining my potential, future dissertation dilemmas—might I hesitate before overcoding my own participants? Might we imagine research and teaching possibilities together?

NEVER THE SAME

We yearned for spaces where it was *okay* (and embraced) to think and act “Slowly” (Ulmer, 2017) for and with PSETs. Through our duo-*currere*, we began to wonder what elementary science teacher education and research might be and/or become. Might we enter thresholds of possibility in, with, and for science teacher education? Might we dream outside of the grids of striations? Might we look at science education, science teachers, and science teacher education as intersecting and intradependent geological assemblages, rather than a linear, lock-step series of *oughts* (Wallace, 2017)? With these questions, this duo-*currere* provoked in us multiple lines of flight (Deleuze & Guattari, 1987) for thinking and doing elementary science teacher education anew, offering sensory imaginings of how current and future elementary science teachers and/or teacher educators might become nomadic. The dynamic nature of our intersecting duo-*currerian* journeys and entanglement of expanded subjectivities (Pinar, 2017) rendered us capable of imagining and enacting what is permeable—what is possible.

March 9, 2017: Christie, Wow. All of this is so beautiful. I don't know where to begin. Before starting this email, I came up with the thought that this almost feels like we are pen pals in so many different ways. Pen pals in the traditional sense of writing notes back and forth to each other, but also in a “post-y” sense. What I continually find so fascinating is that you feel like you are thinking through your work at the very same time I am thinking through my own. When you write, I write. When I write, you write. Like you said earlier, “I don't think I'll ever be the same.” I don't think we will ever be the same. St. Pierre showed me long ago that I am not alone in my perceived “craziness.” You continue to remind me of that.
(Maria, email exchange)

References

- Barad, K. (2007). *Meeting the universe halfway: Quantum mechanics and the entanglement of matter and meaning*. Durham, NC: Duke University Press.
- Baszile, D. T. (2015). Critical race/feminist *currere*. In M. F. He, B. D. Schultz, & W. H. Schubert (Eds.), *The SAGE guide to curriculum in education* (pp. 119-126). Washington, DC: Sage Publishers.
- Baszile, D. T. (2017). On the virtues of *currere*. *Currere Exchange Journal*, 1(1), vi-ix.
- Deleuze, G., & Guattari, F. (1987). *A thousand plateaus: Capitalism and schizophrenia*. Minneapolis, MN: University of Minnesota Press.
- Greene, M. (1995). *Releasing the imagination: Essays on education, the arts, and social change*. San Francisco, CA: Jossey-Bass Inc.
- Haraway, D. J. (2016). *Staying with the trouble: Making kin in the Chthulucene*. Durham, NC: Duke University Press.
- Lagemann, E. C. (2000). *An elusive science: The troubling history of education research*. Chicago, IL: The University of Chicago Press.
- Lather, P. (2007). *Getting lost: Feminist efforts toward a double(d) science*. Albany, NY: State University of New York Press.

- Lather, P. (2010). *Engaging science policy: From the side of the messy*. New York, NY: Peter Lang.
- permeability. (2017). In *dictionary.com*. Retrieved July 22, 2017 from <http://www.dictionary.com/permeability>
- Pinar, W. F. (1975, April). The method of “currere.” Paper presented at the annual meeting of the American Research Association, Washington, DC.
- Pinar, W. F. (1978). *Currere: A case study*. In G. Willis (Ed.), *Qualitative evaluation: Concepts and cases in curriculum criticism* (pp. 318-342). Berkeley, CA: McCutchan.
- Pinar, W. F. (2012). *What is curriculum theory?* (2nd ed.). New York, NY: Routledge.
- Pinar, W. F. (2016). *Study: Concerning relationship in educational experience*. Paper presented at the meeting of Louisiana State University Curriculum Camp, Baton Rouge, LA.
- Pinar, W. F. (2017). That first year. *Currere Exchange Journal*, 1(1), 1-10.
- Pinar, W. F., Reynolds, W. M., Slattery, P., & Taubman, P. M. (2008). *Understanding curriculum: An introduction to the study of historical and contemporary curriculum discourses*. New York, NY: Peter Lang.
- Schneider, R. M., & Plasman, K. (2011). Science teacher learning progressions: A review of science teachers’ pedagogical content knowledge development. *Review of Educational Research*, 81(4), 530-465. doi: 10.3102/0034654311423382
- Smith, D. C. (2000). Content and pedagogical content knowledge for elementary science teacher educators: Knowing our students. *Journal of Science Teacher Education*, 11(1), 27-46. doi: <https://doi.org/10.1023/A:1009471630989>
- St. Pierre, E. A. (1997a). Nomadic inquiry in the smooth spaces of the field: A preface. *International Journal of Qualitative Studies in Education*, 10(3), 365-383.
- St. Pierre, E. A. (1997b). Methodology in the fold and the irruption of transgressive data. *Qualitative Studies in Education*, 10(2), 175-189.
- St. Pierre, E. A. (2000). Poststructural feminism in education: An overview. *Qualitative Studies in Education*, 13(5), 477-515.
- Ulmer, J. (2017). Writing slow ontology. *Qualitative Inquiry*, 23(3), 201-211.
- Van Cleave, J. L. (2012). *Scientifically based research in education as a regime of truth: An analysis using Foucault’s genealogy and governmentality*. (Unpublished doctoral dissertation). University of Georgia, Athens, GA.
- Wallace, M. F. G. (2017). *Deterritorializing dichotomies in teacher induction: A (post) ethnographic study of un/becoming an elementary science teacher*. Unpublished doctoral dissertation, Louisiana State University, Baton Rouge, LA.
- Wallace, M. F. G. (2018). The paradox of un/making science people: Practicing ethicopolitical hesitations in science education. *Cultural Studies in Science Education*, Advance online publication. <https://doi.org/10.1007/s11422-017-9831-3>

Endnotes

¹Online readers may click on the embedded links to access the audio files. Some browsers may require the files to be downloaded before playing.