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FINDING LIGHT IN THE CAVES: ACHIEVING PROFESSIONAL
AND PERSONAL BLISS ON A JOURNEY IN CHEESEWORLD

by

MITCHELL BLEIER

A dissertation submitted to the Graduate Faculty in Urban Education in partial fulfillment of the requirements for the degree of Doctor of Philosophy, The City University of New York.

2018

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and Personal Bliss on a Journey in Cheeseworld

By

Mitchell Bleier

This manuscript has been read and accepted for the Graduate Faculty in Urban
Education in satisfaction of the dissertation requirement for the degree of
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ABSTRACT

Finding Light in the Caves: Achieving Professional
and Personal Bliss on a Journey in Cheeseworld

By

Mitchell Bleier

Advisor: Kenneth Tobin

The most common approach to educating the populace places learners in contrived, curriculum-centered learning environments that are characterized by uniformity, standardization, and incessant high-stakes testing. The primacy of efficiency, an externally imposed and shifting set of non-negotiables, and top-down management dominate schooling. This set of circumstances tends to marginalize learners whose particular attributes, needs, wants and goals locate them far from what can be considered representative of the average student. In other words, efficiency trumps difference and leaves many learners in need of alternative paths to happiness and fulfillment (Callahan, 1962).

This system works for some, but for many it simply does not. Traditional schooling prepares students for a generic future of career choices for which all are somewhat prepared and few or none are truly equipped. There are many good reasons for such a system, but many more reasons for the availability of supplementary and complementary models that recognize difference and diversity as strength rather than deficit, providing opportunities for those among us for whom traditional schooling is not adequate.

The research documented here explores a single person's efforts to pursue life as a cheese professional – cheesemaker, affineur, cheesemonger, chef and cheese consumer. Her professional education program has been and continues to be firmly rooted in the places where cheese is made, sold and consumed. This is an *ad hoc*, on-the-job, enterprise where resources (including people, facilities, organizations and events) arise and are appropriated when and as needed. It is not preplanned, but it is responsive to a fluid set of goals that comprise a more broadly encompassing aspiration of central participation in a collection of interweaving and overlapping communities of practice (Lave & Wenger, 1991), all in the world of cheese. There is a place for the classroom in her education, but only as one among many and varied avenues into and throughout Cheeseworld.

This phenomenological, hermeneutic investigation of the self-structured professional education program of a cheese professional employs a bricolage of methods that are employed and deployed when and as needed in an emergent and contingent process of decision-making that is acutely responsive to the knowledge generated during the research itself. The entire enterprise is authentic inquiry, and includes an embracing of polysemy, polyphony and multilogicality (Alexakos, 2015).

Many aspects of cheesemaking – from farm, to creamery, to the caves where affinage is practiced, to shipping and storage facilities, homes, kitchens and dinner plates – are mediated by natural phenomena that often are assigned to the domain of “science.” Beyond this, as cheese making, processing and consumption involve craft, skill and expertise, they are subject to the hegemonic positivism that Western science practices exert over engagement in knowledge production – even knowledge production outside of what we consider its purview (Kincheloe & Tobin, 2009). Our efforts in the current work seek to instigate a broadening of the

epistemological frame to embrace the interconnectedness and inseparability of the human, social and natural characters of our universe and to make this visible in the totality of human activity.

Ultimately, the current research serves as an example of a unique journey into a professional career that, we hope, at times, resonates with and, at times, challenges the experience of each reader. Although unique and singular, we place this story – both the narrative and the interpretation – in the public space to enlighten and inform all interested parties – learners, educators, policy makers and professionals of all stripes – as they make the important decisions about their own learning and the educating of others.

ABOUT THIS DISSERTATION

This dissertation consists of a prologue, five chapters and an epilogue. Chapter 2, *Adventures in Cheeseworld: Learning in the world and on the job* (Bleier & Morton, 2018), has been published previously with minor modifications. Other parts of the dissertation are in publication at this time or will be published in due course.

The **Prologue** provides biographical information on the two research participants and a brief description of the rationale and purpose of the study. Additional biographical information is provided throughout the work.

Chapter 1, *The nature of this research*, addresses characteristics, methods, and theoretical underpinnings of the research.

Chapter 2, *Adventures in Cheeseworld: Learning in the world and on the job*, provides an overview of the research. Much of the narrative is included here within a context of education

Chapter 3, *How do you know that?: On science as a knowledge system among knowledge systems*, locates Western science as one among many knowledge systems among the ways humans come to understand the universe. This chapter traces an evolution in the way I make sense of the world and identifies some of the underpinning theory and frameworks for my research.

Chapter 4, *How we (might) educate/Life itself*, explore various issues around, and various models of formal and informal education both in general and as they bear on Ashley's efforts to become a cheese professional and a member of the communities of practice that we refer to as Cheeseworld.

Chapter 5, *What Now?*, recaps and organizes the broad and non-linear story of the previous chapters, identifies and acknowledges issues that, while important to Ashley's story and other similar stories, have not played a central role in this dissertation, explores obstacles and challenges to the independent pursuit of an ad hoc professional education, and revisits the purposes for and goals of this research.

The **Epilogue** provides an update on Ashley's professional activities since the close of the period of this research, outlines both of our plans for future work both together and individually, and identifies our expectations and hopes for the role this research will play in the world.

CONVENTIONS

To better understand this text the reader should be aware of two conventions used throughout.

First, as a reflection of the collaborative nature of the research documented here, the pronoun we is used unless we are explicitly indicating either me or Ashley. In those cases, the pronoun I or me will be used to indicate me, and she or her will be used to indicate Ashley.

Second the Sheffer stroke (|) will be used to indicate a dialectical relationship – one in which each of the two elements each presupposes, depends on, and mediates the other. For example:
teacher | researcher.

ACKNOWLEDGEMENTS

Although many hours of reading, writing and analysis have gone into the production of this work, I feel that much of it is not mine, or, more accurately, not mine alone. Along the way, I have spoken, argued, explained, interrogated and otherwise engaged multiple dozens of Cheeseworld citizens – farmers, cheesemakers, affineurs, cheesemongers, consumers of cheese, and many others in related fields. Significant contributions to the ideas in the following pages also have been made by my friends, colleagues and mentors at the City University of New York (CUNY) Graduate Center, particularly those within the Learning Sciences strand of the Urban Education program. Attendees and presenters at our monthly Urban Science Education Research Seminars (USER-S), our research squad, which meets weekly during the academic year, and other students, faculty, associates and visitors in both formal and informal settings have listened to my wonderings, questioned me, challenged my assertions, guided me to resources, presented new and intriguing ideas and points of view as I explored, and continue to explore the move toward central participation in the communities of practice that make up Cheeseworld – the universe of professional cheese production, distribution, sale and consumption.

I would like to acknowledge a few particular people, knowing that this action will necessarily omit, overlook and understate the importance of others' influence on my scholarship and on the work represented in the following pages. For that, I apologize and hope that you know who you are and how your support, engagement, critique and mere presence have shaped both my work and myself, overtly, but also often in ways of which you and even I am not consciously aware.

Amon Diggs, whom I first met when I was a new teacher at William Cullen Bryant High School in Long Island City (Queens), New York. Amon was a social scientist who managed to engage me as science teacher “trained” and firmly embedded in the positivist hegemony of

modern Western Science. This relationship helped me to understand that Science was somehow not enough to understand the human world, nor even the natural world which is its domain.

Hubert Dyasi (both individually and as the metonymic representative of the community he acquired, built and nurtured at the City College Workshop Center (CUNY) in the 1980s, 1990s and early 2000s) has been and continues to be a mentor and friend since my days at City College. His welcoming me, at the very beginning of my time as an educator, into a professional community of practice and a world of intellectual engagement around a broad range of issues that informed, gave context to, and transformed my visions of how the world works and the many ways, both complementary and contradictory, that people make sense of it.

Kenneth Tobin is the soul and vital force of the Learning Sciences (née Science, Math and Technology) component of the CUNY Graduate Center's Urban Education program. As my advisor, committee chair, coach, cheerleader, auxiliary conscience, opener of doors and patient guide, Ken enabled me to find direction, and, more important, to *change* direction when necessary, and finally, to realize that the time had come to narrow my focus and finish my dissertation.

His eclectic, broad-ranging and phenomenally expansive efforts to make sense of the world always are way out in front of my more-focused intellectual forays. Often Ken takes an eccentric new tact and begins study of some obscure, arcane, way of making sense leaving me shaking my head and thinking, "*Now* he's gone somewhere I will never follow," only to have my epiphany months or even years later when *our* discussions, discussions with one of his colleagues or students, or reading an article or chapter from his prolific body of work all fall into place for me. The opposite side of that coin is when I produce a brilliant piece of writing and, in an effort to dig a little deeper, find something Ken had published years before that explored the

same ideas, often with deeper insight. In the present, Ken's ability to listen to or read my nascent, often only partly formed ideas and very quickly identify the essence of what I am struggling with is almost magical. Ken's belief in me (and the rest of our community) is apparent from his pushing me when I was not ready to present at conferences or write for public consumption, and always constructing a (reasonably) safe environment to test drive ideas and present them publicly. His guidance, patience and encouragement made this work possible and made it better and more meaningful than it could have been without him on my team.

I managed to stay at the Graduate Center until Ken was ready to retire. Thanks to his perseverance, he made sure that I did not outlast him. As we both officially leave the Graduate Center at about the same time, I wish to thank him and all of the rest of the community who had a hand (invisible or otherwise) in my research and in the present work.

The other members of my intellectually diverse and eclectic committee: Gene Fellner (College of Staten Island; CUNY Graduate Center); Federica Raia (CUNY Graduate Center; UCLA Graduate School of Education & Information Studies) and Mark Zuss (Professor Emeritus, CUNY Graduate Center). Each so different from the others that my thinking and writing were tested in the crossfire and, I believe, both were distressed | burnished by the process. Each committee member contributed more than they can know and each endured long periods of silence from me during which I hope they now realize, the expertise, guidance, critique and friendship they showed me were helping to shape and improve my work. Gene's ability to challenge even the most basic assumptions that most of us take for granted constantly made me question everything I considered, claimed and wrote. Mark brought his swirling, expansive universe of ideas into collision with mine creating the shrapnel that tore open my thinking and revealed new, deeper truths in my work than I could have done on my own.

Federica and I were colleagues at the City College of New York where we worked together for several years educating science teachers. Federica, direct, and not reticent about lively disagreement, demanded at all times that I live up to my own ideas, challenging me to justify everything I said and wrote in terms of my *own* ideas. Her own work on complex systems and on relational medicine influenced the way I think about the world and, ultimately, the way I made sense of the phenomena explored in the following pages.

My extended family (both biological and collected) who for a decade became entrained into my journey, who endured more than a few bouts of “I don’t think that I’m going to finish” and “I’ve learned enough, why do I need to complete the dissertation,” and who stood by, encouraged, cajoled, shamed and, by *every* means necessary, saw me through a process that was long, arduous, daunting, but most of all enriching and transformative. Chief among this group is Alexis Morton – my partner of four full decades and cohabitant – who, by virtue of proximity alone, was present for virtually every day of this journey. Her unquestioning and unstinting support (including living among stacks of papers and books that rivaled the Collyer Brothers collections; many, many weekends of “I can’t do anything this weekend, I’ve got to write,” and “Just read this one more time, I made a few more minor changes”; and sleeping in the glow of the computer monitor when the muse took control at any and every hour of the night) gave me the strength and determination to keep at it when work, life and indolence all conspired to stop me.

A number of people are members of *both* my extended family *and* my professional family; they live in and bridge both my professional and personal lives. Among, but not entirely comprising this group are Becky, and Suzanne. I have worked closely with both of them and each, in her own way, has shaped not only how I do my professional work, but my fundamental

conceptions relating to engaging others in the business of making sense of the world. Both are insatiable learners and center the morality of choices made in their (and all of our) educational work. They are among my chief axiological guides.

Rebecca Dyasi (Becky) is a principled educator. She accepts and embraces all learners and, no matter the challenges and conditions, enthusiastically goes about the good work in ways that would be a joy to consider as a mere observer if she didn't unfailingly draw one into the work alongside her. Becky's understandings of the natural world *and* the needs and capabilities of each learner are remarkable. For many years I have worked side-by-side with her in our efforts associated with the City College Workshop Center (CUNY). She has been coworker, mentor, conscience, guide, co-conspirator and friend. I hope that, along the way, she has learned from me as well.

Suzanne Carothers, another magnificent educator whom my efforts to describe leave me grasping for superlatives that always seem to fall a little short of the task. Her questioning, arising out of both genuine interest and deft instructional skill challenge every assumption about natural phenomena and scientific processes on the one hand, and pedagogical practices on the other hand. These inquiries almost always begin with some variation of, "Well, you know I don't know anything about science, but..." and somewhere include, "So, what are *you* going to do about it?" Suzanne leaves no space for lack of commitment or unexamined professional practices. Her work and her life have touched and transformed students (and their families), colleagues, neighbors, friends and, not least among them, me.

Finally, Ashley, my co-researcher and increasingly a role model. She shared her journey into and through Cheeseworld and continues to do so. She has shared her triumphs, but, more important, she has opened up and shown her scars and wounds and allowed us both to poke and

probe them publicly. Her bravery, vulnerability, competence and self-doubt are addressed in this work. Each of these should resonate with all of us and, I hope, help us make sense of our own experience. Her story is, in many ways, just beginning and I hope to be able to continue to explore her, my and our stories as I tag along as observer, mentor, co-researcher and would-be Boswell.

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PROLOGUE:
THE RESEARCHERS AND THE RESEARCHED

The present study is built on the preliminary stages of an ongoing partnership between two researchers examining the efforts of one of them to blaze an educational path toward success, acceptance and personal fulfillment as a professional in the world of artisanal cheese production. Throughout this dissertation we will provide biographical information that will help both researchers and readers make sense of the events explored and described in the narrative. We will examine historical, current and possible future educational models, epistemological shifts in knowledge production, particularly within the realm of Western science practices, the state of artisanal cheesemaking and selling, and the research methods and approaches that we have employed in this inquiry. We intend to provoke an ongoing discussion among stakeholders that has the potential to transform the landscape of possible entry points and paths toward central participation in a broad range of communities of practice.

RESEARCHER: MITCH

This dissertation in many ways reflects the processes of my scholarship as much as it does the “products” of it. Reassessing, reconsidering and redirecting as the meaning of each theoretical framework, idea, news item encountered, or conversation engaged in is both shaped by and helps to transform/reconstitute the story that, during this period, has occupied most of my thoughts. Although I try to maintain clarity and coherence in the telling, much of the meaning of the document you have in your hands (or on your screen) lives in the multivoiced, polysemic mess that is the way the world actually is. For a time, I fretted over my tendency to be attracted by the next shiny object, rather than focus on whatever it was that I was exploring. I have come to see that, although focus and depth are essential to any effort to make sense of the world, rigidity

feeds into a tendency to shape knowledge construction within existing frameworks, missing meanings that have difficulty asserting themselves through the established, hegemonic paradigms.

The imperfections of my understanding of these ideas are born out of a triage of parts of these guiding theories as they impinge upon my thinking at any given time. While the common historical agreements for, at least the substance of the arguments is necessary for us to discuss and construct meaning (or sense), I do not claim that I am representing Giddens or Sewell or any other researcher/writer. Merely that they have touched my thinking in ways that are at times overt, sometimes subtle, and often nearly (but not quite) undetectable. My advisor, Ken Tobin and, to a lesser extent, the entire Learning Sciences community at the CUNY Graduate Center have helped me to challenge an educational and professional lifetime of seeking answers – Truths – and, having found them, transforming them into postulates upon which further truth-building depends. The new baseline established with the accretion of these truths left them unquestioned and largely unexamined. Among the most important changes in my scholarship and in my thinking has been the recognition that this intellectual approach to the natural world, and even more so to the human world is an inadequate and, in some ways, dangerous way of making sense that may result not only in the production of ultimately non-viable knowledge and less-than-efficacious understandings of both natural and human phenomena, but also in the oppression by those in power (e.g., the academy) of those who are not and of their ways of knowing.

This dissertation is not meant as an indictment of schooling or formal education (although it may be used to support such critiques), but rather a component of the discussion of how people become educated or educate themselves. My intention is to incite a broadening of the discussion

for those decision makers – learners, educators, policy makers – who shape the landscape of educational opportunities and possibilities for themselves and for all of us. Both traditional and non-traditional forms of knowledge production and schooling can inform, supplement and support each other, providing an environment where learners can find paths to success and fulfillment.

RESEARCHER: ASHLEY

Ashley, my coresearcher, is not what one would consider a scholar in the traditional sense, nor does she have an insatiable curiosity that drives her on an unchecked quest for knowledge for its own sake. She is, in short, like most humans. She engages with her world and with people. She has interests, proclivities, leanings and aversions. She *does* have a passion for cheese – making and consuming. This passion was not nurtured in any official way at the institutions where Ashley was schooled. Surprisingly, it was valued unevenly even in her work experience as a cheesemonger in a large grocery chain.

Ashley's pursuit of a career in cheese was sparked and nurtured, in part, by chance encounters with other cheeseophiles. Her agentic choices to seize on these chance opportunities is how she began and continues to forge her professional education and her network of supporters.

In some ways, Ashley's journey is not situated within a well-defined community of practice (Lave, 1991). She does not benefit fully from any plan, curriculum or orderly involvement that old-timers might structure for newcomers. She moves between institutions and organizations and, while welcomed, is not as yet fully part of any one. Plans to nurture and bring along newcomers cannot fully be deployed for/on/with her as she is not an official employee or apprentice. The very flexibility that affords her the ability to appropriate resources when and as

needed is not fully accommodated within the organizations where she seeks to learn. We have seen that her official place of employment – the cheese department of a large national grocery store chain – was inconsistent in its accommodation of Ashley’s professional goals and desires. It was personality-dependent in its offerings of opportunities for Ashley’s knowledge production and it was mediated by the constellation of social factors that pervade most provinces of social life.

This is, to a large extent, a structural issue. It is not (necessarily or always) intentional. It merely reflects the unusual nature of Ashley’s project. This raises a question: Can communities of practice develop and incorporate ways to accommodate allies, outsiders and non-conformists? In other words, what are the possibilities for educating that either (a) tap into and draw from the many diverse current and historical ways of educating, or (b) parallel the periodic revolutions in science outlined and described by Thomas Kuhn (2012)?

In the following pages, we engage (among many others) with the following questions: How do we learn? How do we educate? How do we come to know what we need to know in our professional lives? How do credentialing and gatekeeping mediate who gets to do what with their lives? (Where) is there a place for learners who are different?

THE RESEARCH

Formal schooling terminating in a diploma, degree, or certificate is a standard educational path. The credentials earned signify something about the abilities and attributes of the holder that may or may not have any bearing on the ability to engage in purposeful, productive work as a machinist, teacher, harpist, basketball player, or any other occupation or vocation.

The efficacy of alternative and supplementary educational models including apprenticeship and the closely related alternative training and cooperative education has been claimed and

demonstrated (Lauterbach, 2009). These approaches usually are administered by educational and craft or industry organizations in some sort of cooperative arrangement to teach students or participants the ways of a particular profession. Although perhaps more relevant to the eventual occupation of the participant, these models nonetheless often have in common that they, much like the education received in the K-12 experience, are curriculum-based. The learner is to be shaped and molded into a professional in a designated field – carpentry, music, etc.

The possibility of a learner-centered and learner-controlled bricolage approach may provide opportunities for individuals to take an agentic role in the determination of both their needs and their direction. If, among the choices available to such learners is structured work with professionals, we may be able to accommodate a more diverse set of learners with a more diverse set of needs. Workers educated in this way, all taking different paths to the workplace – paths so varied and eclectic that they cannot be planned or predicted except as they unfold in the living of them – may well bring with them experiences that will drive innovation in the fields they enter.

This phenomenological, hermeneutic investigation explores one young woman’s efforts and experiences as she creates and follows a dynamic, contingent plan of self-education in the professional making, aging and distribution of cheese.

CHAPTER 1

THE NATURE OF THIS RESEARCH

Finding Light in the Caves: Achieving Professional and Personal Bliss on a Journey in

Cheeseworld is a phenomenological, hermeneutic study of the professional education of Ashley, a young cheesemaker/affineur/cheesemonger. She had had an unremarkable but respectable K-12 career as a student but found that formal post-secondary schooling was not providing her with the things she wanted or needed. She found herself directionless and unsure of what to do with herself and her life. Then, happenstance and a series of choices led her to become involved in Cheeseworld, a community of practice about which she was largely unaware until she stumbled upon it, and within which she began to forge a professional educational program for herself comprised of a dynamic group of mentors, as well as workplaces and other fields within and among which she could move toward central participation.

Ashley and I are partners in the present study. Identification of, and commitment to our inquiry as hermeneutic and phenomenological in nature means that our research focuses on the particular lived experience of the participants. It is interpretive – characterized by attention to difference and the embracing of contradiction. We intend for our work to be both truthful and transferable but make no claims of generalizability in the positivistic sense that Western science practice hegemonically demands of *all* attempts at sense making. (Schwandt, 2007; Guba and Lincoln, 1986).

The doing of research – making observations, collecting, organizing and analyzing data, and the statement of conclusions – is inseparable from interpretation. This most glaringly apparent in the human sciences. It is merely an illusion – one that is both actively promoted and passively accepted – that the design, carrying out of that design, and the analysis of data are objective and

that the research and its findings are somehow separable from and independent of the researcher(s). These elements are not merely *subjective*. The present study (as with all research and all human activity for that matter) exists within a social context – a matrix of beliefs, traditions and understandings – that is highly *intersubjective* (Schwandt, 2007). The participation of multiple researchers guarantees the highlighting of this intersubjectivity, but, even where a lone researcher is recognized, the phenomena, the existing literature and the researcher’s own experiences all mediate the interpretations – the knowledge – generated during the course of the investigation and the sharing (via text and presentation) of the research findings (Tobin & Steinberg, 2015).

CHARACTERISTICS OF THE RESEARCH

If we are successful at addressing the ontological, epistemological and axiological positions that initiated, guide and continue to shape this project, we can characterize this research as emergent, contingent and authentic. It also is characterized by a commitment to polysemy, polyphony and multilogicality.

Dynamic and evolving

Our research is both emergent and contingent. We do not start with an initial, inflexible question that is, in some way, answered at the end of the research. Whatever the initial plan, the progress of the research and the questions pursued continuously respond to the research itself. Each “step” is both a result of and a response to knowledge produced during the course of the research.

Multiple voices – Multiple meanings

We value, and seek to employ, respect and promote polyphony and polysemy. In polyphonic research, the “story” of the research is told in the voices of *all* participants. An effort to affect a recursive sharing and dialogue around the work helps to realize this goal. As this research is

polysemic, it is not just the voices, but also the perspectives of the participants with which we seek to infuse the text. Both polyphony and polysemy tap into difference and contradiction. This, we believe is where the meaning of the narrative can be most interestingly made subject to sense making. Through this process, all participants' voices, and all meanings mediate each other. As the reader joins the research participants, knowledge production expands and a complex, contradictory story emerges that informs and serves each member of this expansive partnership differently and complementarily.

Polysemy is not merely a feature of our human-centered research, it is a feature of life itself. Any research that is not polysemic is by default reductive and simplified, often to the point of meaninglessness. All human activity is experienced in different ways by each individual. The realities and meanings these individuals perceive and construct are all viable. Each individual's understanding and social interaction is enriched and rendered more meaningful when she is able to empathize – to understand, if not adopt/adapt the ideas of the other.

Nor is polysemy solely within the purview of the “soft” sciences. Near the beginning of the twentieth century, Albert Einstein upended our understanding of the physical world. The orderly and retrospectively simple ways of the universe as conceived by Newton now were not so fixed, not so orderly, and certainly not so simple. However, Einstein hadn't negated the Newtonian view of the universe; he provided us with a complementary lens for making sense of physical phenomena, both every day and extraordinary. However, when Einstein played tennis, he functioned within the Newtonian constraints as if these accurately describe the workings of the universe. This simplified model describes a limited set of physical phenomena in ways that allow us to make sense of a small slice of our world – a model that becomes all the more powerful as we recognize its limitations (what it can and, to a great extent, what it can't illuminate for us).

[Disclaimer: I don't know if Einstein played tennis.]

For the benefit of all involved and even those who are not

Our research is shaped by an axiological stance that informs, both overtly and passively, decisions we make at every juncture.

Among our goals in engaging in the present study is that the research is authentic. That is, we intend for the work to be meaningful for all participants (including the readers), and to do good in the world. Authentic inquiry is situated “in the world of lived experience” and is transformative for the researchers, the researched, and for the research itself (Alexakos, 2015). We have made efforts to insure the legitimacy and efficacy of this work by attending to authenticity criteria originally developed by Yvonna Guba and Egon Lincoln (1989), adapted by Ken Tobin (2015) and evolved over years of use in research in the Learning Sciences strand of the Urban Education program at the CUNY Graduate Center

Briefly, the four authenticity criteria that guide us are *ontological authenticity* – the research is characterized by its support/encouragement for all participants to be changed through their participation; *educative authenticity* – the research provides opportunities for all participants to learn from one another. This criterion embraces diversity and difference as strengths. It recognizes difference as a resource rather than an obstacle; *catalytic authenticity* – the research becomes a catalyst for positive change in the world enacted by the participants, and *tactical authenticity* – participation in the research is potentially beneficial to all participants.

Changes in the ways we have come to work together reflect both ontological and educative authenticity criteria. Tactical authenticity is grounded in the questions raised and the particular threads of the story that we (both together and as individuals) choose to pursue. Catalytic authenticity in our research derives from our belief(s) that our sharing of this particular and

unique path of self-directed education can live in the world as an example, a model and a potential guide (for decision makers: learners, educators and policymakers) to successful, satisfying participation in a community of practice. Catalytic authenticity in our work is largely aspirational, may be realized only in time, and may never rise to our (the researchers') awareness.

Taken together, the authenticity criteria and the authentic inquiry which embodies them provide a framework that “explicitly incorporates and values multi-representation, multiple voices (polyphonia), and multiple realities (polysemia), is holistic, encourages inclusivity and embraces otherness” (Alexakos, 2015; p. 45). The adoption and adaptation of these criteria is the result of an axiological stance that includes our belief that our research should, at least potentially, do some good in the world.

It is important to note that we are not always consciously applying these authenticity criteria, but rather the criteria, through constant reflexive and recursive intersubjective interactions within our community of practice centered on education and education research at the Graduate Center, are infused into our axiological stances. Although most of the time we are not explicitly evaluating our work in the context of the authenticity criteria – in fact, all four authenticity criteria are not achieved at all stages of the research – the criteria mediate our conversations, our writing, and the discussions we have with colleagues, associates and coworkers in the Learning Sciences strand of the Urban Education program at the CUNY Graduate Center.

Multilogicality

Methods and processes employed during the course of this research are not chosen up front. They are considered and selected when and as suggested by the research. Observation and participation in cheesemaking, affinage, cheesemongering and classes raises questions and

presents opportunities that, if perceived as potentially fruitful, will be pursued. Discussions, interviews, correspondence via written texts are used when and as they arise as possibilities. It is not only the *selection* of an approach or method that is decided upon through the period of the research, but also the jettisoning of such activities. No particular method is included or excluded permanently – assessment and reassessment of research activities is ongoing and continuous. This bricolage approach often is a challenge to, established, learned, inertia-laden views of educational research largely driven by positivistic and cryptopositivistic stances held by both consumers and producers of the research (Berry, 2015; Kincheloe & Tobin, 2009). However, multilogicality in education research enables researchers to follow the story and to produce rich, contextualized knowledge that is provocative of further questioning and demanding of further investigation.

COLLABORATION, CORESEARCHING AND COWRITING

Ashley and I are co-researchers in this project. This has not always been an easy or natural arrangement for us. The academic paradigm that characterized and dominated much of my schooling, mediates the way I view the world even as I fight against some of its elements to which I am axiologically opposed. Our challenges seem to stem not so much from our differences, but from Ashley's acceptance of similar educational frameworks and experiences. She has not (yet?) come to reject some of these and this makes it especially difficult to throw off the shackles of our shared educational histories.

Our work together occurs when we work *together*, each of us contributing in ways that most suit ourselves to contribute and each of us benefitting in ways specific to our needs and our goals.

My observations of Ashley's activities in Cheeseworld—cheesemaking, affinage, cheesemongering, and consuming cheese, are entry points for me. They allow me to be surprised or puzzled, to know things I didn't know, to make me aware of things about which I was previously unaware. Of course, for Ashley, these activities are her professional practice. They are how she is involved in knowledge production within the community of practice that has become central to her identity even as she continues to become a more central practitioner in it. Of primary importance to the research is the opportunity to experience some of this world as an outsider. It raises for me, wonderings, contradictions and questions that serve as entry points for me in my efforts to make sense of the nature of Ashley's experience as a learner, practitioner and teacher in Cheeseworld.

Our conversations about Ashley's activities in Cheeseworld allow us to make sense together. They are the richest source of "data" for both of us. They enable me to think and write, and they support her reflection on her own learning – a process that enables her to think more deeply about where she is and where she is going. These conversations usually are initiated by a question or observation of mine, but also can be spontaneously generated by something on her mind about which I don't know and could not possibly have anticipated without awareness of events in which Ashley has participated and I have not. My questions are sometimes very specific: *When and how often do you inoculate blue cheese with blue cheese mold during the production?* or *How is a change in temperature related to the action of various strains of bacteria?* Sometimes the questions are of a more general nature: *How does cheddar production differ in Britain and the United States?* Sometimes the questions are quite open-ended: *Tell me what has been going on at work?* In addition, we often have informal conversations – the

everyday talk about each of our lives that goes on when we are not consciously unpacking her professional work.

Initially I envisioned our collaboration as a partnership or a two-member community of practice with each of us as equal but independent actors. However, I was operating within the confines of the educational and academic practices to which I was accustomed. I would write four or five pages and send them to Ashley expecting a substantial written response. This back-and-forth, this recursive communication would gradually result in a rich, complex, polyphonic narrative. What actually occurred is that Ashley would take a long time to respond (even amidst frequent nudges from me) and the responses were rarely satisfying to me. Sometimes they would take the form of an uncommunicative text message of infuriating brevity: “I agree.” This clearly was not helpful. Neither was my stubborn adherence to the model that I had explicitly rejected, even as I faithfully followed it. I realized (with the help of discussions with several of my colleagues at the GC) that written correspondence might not be how Ashley explored ideas. Perhaps my approach was not realizing – in fact, it might be squashing – my aspirations *and my claims* of polyphony. The research would not and could not proceed in this way. Ashley is extremely social. She communicates by interaction with others orally and aurally. Words on paper lack the richness of prosodic and proxemic elements that support communication for her (and, in fact, similarly for the rest of us). Our collaboration around text and documentation now centers on more frequent discussions about smaller, more focused pieces of text. Both Ashley’s oral proclivities and my written ones are honored and utilized. This is reflected in Ashley’s appearances in the text primarily in the third person and mine largely in the first.

While I make every effort to capture and communicate the complexity and multidimensionality of this story, it is necessarily incomplete – partially as a result of my

inability to capture every detail and nuance and every “tangential” train of thought, and partially because of intentional choices of what to exclude from both the narrative and analysis that comprise this work. I have a story to tell. Ashley has a story to tell. I have endeavored to capture both of our stories, or at least parts of them to explore one broad area of interest: how a learner navigates the constraints of available resources and selectively, strategically, haphazardly and serendipitously appropriates those resources and cobbles together a program of professional education within the communities of practice that constitute Cheeseworld.

During the course of this research, Ashley and I – sometimes together and sometimes each on our own have taken the first steps down interesting paths of inquiry only to shelve those journeys for future collaborations and refocus ourselves on her self-directed professional growth and her move toward central participation in Cheeseworld.

It is important to note that most of our work together occurs through a recursive meaning-making process that consists of us talking about her experiences, sometimes initiated by my questions, sometimes by her identifying some event as important to our discussion. Throughout, I write her input necessarily augmented with interpretation and other additions. This text moves back and forth between us numerous times until it reflects what each of us feels is both the narrative and the meanings that the story conveys or should convey.

To be sure, many aspects of each of our lives occurring outside of the margins of this text mediate the events and the analyses contained here. For Ashley, this includes a not atypical American family scattered across several states and made up of multiple adults – both supportive and not – with parental and quasi-parental roles and scattered cousins, siblings and other “brothers” and “sisters.” While they all are part of this story they exist in these pages merely as overtones and undertones.

Then there is the constellation of characters from both within and without Cheeseworld who loom large in this story. Some of them make no overt appearances; others are central to the story. All of these – family, colleagues, major and minor players – generally are not explored explicitly here, but their presence has been and continues to be essential to the unfolding and understanding of Ashley’s story.

My set of external mediators mostly involve my professional educational activities, as a learner, as a teacher, and as a worker. Dynamic (although sometimes large and sluggish) institutions and a shifting set of expectations and cultural norms within and surrounding my involvement in professional education mediate both my interactions with professional education and my interpretations of Ashley’s experiences in schools and in Cheeseworld.

The complexity of the universe of structures, actions and relationships that shape and reflect this story as well as the open-endedness of the additional meaning brought by the reader(s) will, I hope, result in a significant contribution to understanding and further research in this area.

CHAPTER 2

ADVENTURES IN CHEESEWORLD: LEARNING IN THE WORLD AND ON THE JOB¹

by Mitchell Bleier and Ashley Morton

The shortest distance between two points is not necessarily a straight line, especially when one of those points is in constant motion. When we set off on a leisurely walk in the woods, our purpose is not to get “there” nor to do it quickly. Yes, we often walk marked trails, appreciating the guidance of those long past who mapped out the routes, and those more recent guides who clear the brush and maintain the trails. But the real joy often materializes when we stop to explore something unusual or unexpected or depart from the path to follow a set of tracks in the mud. These ruptures of the usual and expected, these surprises and contradictions are the complexities that define and three-dimensionalize both our physical and emotional journeys; they are the substance of the stories we tell when we get back home. Even if it *is* the shortest distance between two points, the straight line is not necessarily the route we want to take.

SCHOOLING VS EDUCATING

I have been a teacher of science and science education for over thirty years. I have seen both students and schools struggle to define and carry out their missions. Students may be labeled: deficient; gifted; Level 1, 2, 3 or 4; low-performing or high performing; at-risk; on-track or off; SPED; pre-vocational; proficient or emerging; eagles or crows. Teachers are probationary or

¹ This chapter, co-authored with Ashley Morton, has been published previously with minor modifications. (Bleier & Morton, 2018)

tenured; effective or ineffective; good or bad; masters, novices and more. Schools are models, magnets, basket cases, “under registration review,” in or out of compliance, world-class, last resorts, zoned, charter, public, private, parochial, vocational, for-profit and more. But none of these designations really get at the issue of what brings learners and teachers together in these institutions (formal or otherwise), and what should be happening at this nexus for any and all of the individuals involved, and for the families and various layers of governmental structures concerned with the success (however that may be viewed through the epistemological and axiological lenses each employs) of these costly and ubiquitous arrangements.

We all are painfully aware of schools that “just don’t work,” of students that won’t “make it,” and of teachers who should be anywhere else but where they are. Most of us in academia also know that “the system” allows some of us (*particularly* those who have ended up in academia) to succeed and even to thrive – to make our way into the world of work and career and livable income. In this chapter (and in my research in the Urban Education Program at the CUNY Graduate Center), I explore a single learner’s ongoing navigation of the educational terrane upon which she finds herself. It includes smooth sailing, and good tailwinds. It also includes storms, portages, bushwhacking, lost and faulty navigational instruments and a great deal of trailblazing. The journey isn’t over. We join it in-progress and we leave it in-progress. My hope is that, at the end of our time together each of us is transformed, at least a little, and finds that this tale can inform our historical views, our visions of learning and teaching, and our decision making around these issues for ourselves and for those whose lives we can affect.

This is the story of a young cheesemonger and nascent cheese professional. She is not the subject, but, in fact, a full partner in the investigation – a co-researcher. Ashley’s story is one that in itself is worth telling and being told. As I take on this task I find myself asking, “Whose story

am I telling—mine or hers?” I want to honor her experience and present her voice, her point of view and her understanding (interpretation) of the story. But, equally important, is my voice, my point of view, and my interpretation of her experience.

What attracted me to this story is as meaningful as the story itself. This (in the following pages), in fact, is my story too – a story whose ontological, epistemological and axiological dimensions are mediated by over fifty years of engagement with American education as a student and an educator. It is not *the* story, but *a* story of the social, emotional, and cultural landscapes upon which our lives play out. The story’s richness and depth will be found in its aspects that resonate with our own experiences, but to a much greater extent, in the contradictions, conflicts and dissonances that both complicate and illuminate each of our efforts to make sense of the events, descriptions and interpretations that inhere.

My hope and intention is that this story of one person’s journey in constructing and immersing herself in a self-designed professional education program that is an alternative to, but, at the same time is inextricably entwined with the prevailing educational paradigm(s), will inform and support individuals’ and organizations’ efforts to provide environments that support each person’s efforts to educate herself both for making productive contributions in the world of work and for leading a satisfying full life.

This is a phenomenological, hermeneutic exploration—it explores a part of one person’s journey and presents, to the extent that my abilities allow, not repeatable, generalizable data and inferences, but a unique and singular story that, along with what the reader brings to the table, surrounds the narrative with meaning from which each of us – participants in the described events as well as the readers – will make meaning that, if we are successful, will improve our lives and our work, and benefit all of us.

WHOSE STORY IS IT?

A story cannot exist independently of its oration, and there is no telling in the absence of a tale. A *story* and the *telling* of it, exist in a dialectical relationship, each presupposing and dependent upon the other. Consequently, no story exists independently of the teller, the receiver and the moment in time. Stories are, in fact, re-constructed and transformed with each recounting. Our *own* stories change both in substance and in meaning with each telling as they are mediated by audience, time, place and who we are at the moment.

The gravity and responsibility inherent in the telling of stories – our own, and *particularly* those of others – looms so large in my work that I hope the reader will tolerate and find value in a brief side-trip here to explore this idea.

A journey of discovery and rediscovery

Recently, a friend of mine, Janet, who had lost both parents within a few months of each other decided that she would embark on a road trip through both time and space to retrace the family's histories and geographies. She planned to visit places and people who were integral to her parents' individual and joint histories during their long and full lives. Her plan was to spend about six months on the road documenting her experiences and her insights as she travelled from her home in western Massachusetts to Virginia, the Carolinas, Florida, Alabama, Oklahoma, New Mexico and just about everywhere in between. As she travelled, she would blog with some regularity so that those of us for whom her parents were an important part of our lives could experience the trip with her, respond to her thoughts, ideas, and emotions, and be part of the discovery as well. She loaded the car with maps, camping gear, writing supplies and several cases of wine to be used as gifts for long unseen friends and relatives who would serve as her hosts and partners in this undertaking of documentation and discovery.

Her first stop was to be New York City – the last place her parents lived before retiring to rural Western Massachusetts twenty-five years earlier. She stayed with me as she visited familiar places and people from her parents’ history and her own childhood, often having to explain along the way who she was, and why security guards, apartment dwellers and others should let her in to their churches, office buildings and residences.

Janet was very concerned about telling her parents’ stories – she wanted to “get it right” and not misrepresent them. As my research makes claims of polyphony and polysemy, I also was struggling about how to honor and represent the voices of the participants in my own work.

Because Janet and I both were reticent about misrepresenting others’ stories, we talked long and hard about our own histories. It is the rarest of tales that involve only one person. All other stories are transactional – they belong to *all* of the participants – the original actors as well as those who come to be part of the story when they receive it through listening to, or reading it as told by others. Janet’s parents’ histories and their meanings are, and always have been, continuously negotiated and renegotiated. They are *our* stories as well as theirs. Now that they are not here to assert their own memories and interpretations of their narratives, we continue to preserve and evolve them as our own stories.

We talked about our family stories including the ones we held in common after over forty years of friendship. Quickly, it became apparent that events we shared either by having lived them together or through myriad tellings of family history were different for each of us. The details, the meanings, even the protagonists were different in each of our versions. But our common story is honored in each of our tellings as well as in the contradictions that drive us to probe and transform the tale with each telling and with the perspective of all that has happened since. Our stories – those we live and those of ourselves and others that we tell – all are

interpretations mediated by memory, perspective, time and the complexity of the world that surrounds them.

None of our stories are *the* Truth, but in them live meaningful *truths* that we can access and use for guidance and communication better than any ostensibly “objective” telling would allow. Each of us surrounds our “facts” with meaning. When our facts are shared with others, we each construct different stories characterized simultaneously by resonance, difference and contradiction. This trio exists even within our own stories (which change with time and the context in which we focus on them). Furthermore, we negotiate and co-construct these stories together as we share them.

While our discussions gave *me* a way to look at the story I was telling, I could tell it did not sit well with her. The burden of representing others who could no longer speak for themselves was having an almost paralyzing effect on her mission.

On a morning that she had no appointments, she took a break from her undertaking and we paid a visit to the Tenement Museum.

At the museum

The Tenement Museum is located in an apartment building on the Lower East Side of Manhattan. Its mission is, in part, to introduce and educate visitors to the lives of the residents of this building over the past one hundred and fifty years.

We met our guide and, after a brief orientation out on the sidewalk, we entered John and Caroline Schneider’s restored 19th-century Lager Bier House at 97 Orchard Street. From the moment we stepped inside, our guide made the Schneiders, their customers and their associates come alive. She engaged us in conversation, provided us with copious amounts of information (including photographs, artifacts and stories), and guided us through the methods and thought

processes that historians and archaeologists use to uncover, reconstruct and interpret the past. We spent nearly an hour chatting as we sat around a table in the tavern and viewed storage areas and other rooms including the Schneiders' bedroom and living areas. By the time our guide informed us of Mrs. Schneider's sudden and untimely death as we stood inside of the kitchen that was so much a focus of her daily life, the shock and emotion of the announcement was as real and immediate as if a member of our own family had been taken from us.

Our guide's reconstruction of the past via evidence and her own personal ideas about what the lives and the people we were exploring were really like combined to make our experience deep, meaningful and very personal. She always was explicit about where the evidence ended and the speculation or interpretation began but for all of us, it was clear that the truths and meanings generated during this experience lay no more in the "facts" than in the interpretation.

Personal connections (both our guide's and our own) to the experiences of the residents of 97 Orchard Street and the surrounding neighborhood were woven into the tour both personalizing and reifying the life experiences of all of us. Our ninety-minute journey through history, social change, and complex emotional landscapes as well as the exploration of the diligence, perseverance, hopefulness, losses, pain and resilience of the residents of 97 Orchard Street engendered, empathy, emotional resonance, and self-reflection. This visit to the Tenement Museum was truly transformative. It caused each of us to consider and reconsider our own lives in the context of the Schneiders' and of the independent and common parts of our own and each other's lives.

Discussing this experience later, we recognized that what emerged from this "common" experience was different for each of us. Each one of us brought our own lives into that tavern at 97 Orchard Street and emerged transformed with new understandings of our own stories.

* * * * *

Janet had new resolve and was impatient to hit the road to both explore and construct the contingent and dynamic truths about her parents' lives, and, of course, her own. My commitment to presenting both my story and Ashley's story around the same set of events was strengthened but my approach needed some work. First, it was clear that I would have to focus on telling *my* story, the only one I am "qualified" to tell. In fact, the only story I am telling regardless of my intentions. Ashley's story would have to assert itself via a process of reflexive and recursive dialogs around my writing. Second, an ontological shift now had me, more than ever, convinced that a somewhat fictionalized account of events would better enable me to explore and communicate valid and useful small-t truths that both were reflective of what was happening and would resonate with Ashley's, my and the readers' grappings with our own experiences.

My introduction to the idea of "objective" or "accurate" memory or history of lived experience in dialectical relation to one's intentional or *de facto* fictions was in Peter Waldman's (2015) *Educating Desire: Autobiographical Impressions of Addiction in Alcoholics Anonymous*, a book with a semi-fictionalized narrative of an AA meeting at its core. While reading this book and in a number of discussions with Peter, I began to be intrigued with both the role and the inevitability of fiction in our individual constructions and our social co-constructions of reality.

We are compelled to fictionalize our stories so that our narrative conveys the meanings that the events alone – even if we *could* provide an objective account – cannot communicate. Yet we also bear the responsibility (to ourselves, our stories, our collaborators and our audience) to be truthful.

Of course, fifty plus years of inhabiting an epistemological landscape dominated by the hegemony of Enlightenment-driven thinking and nurtured by an educational and professional life

largely characterized by scientific, positivistic, Western-science imperatives made me resistant to these dangerous ideas to which I was increasingly attracted. However, unpacking of my recent Tenement Museum experiences, both with Janet and with my colleagues in the Learning Sciences strand of the CUNY Urban Education Program, finally allowed me to give myself permission to employ semi-fictionalized narrative in my own work – the work described in this chapter.

WELCOME TO CHEESEWORLD

The caller ID reads “Ashley.” A wave of dread (*What is it this time?*) passes and I pick up the phone. “Hello?”

“I have some good news.”

Most of our conversations lately begin in this way – or something very close to it. After years of setbacks, obstacles and other difficult experiences, Ashley has taken control of her life appropriating available resources to achieve an emergent and dynamic set of goals and seeing in her world opportunity in every situation. I, having been an observer over the years, have not yet become accustomed to *this* Ashley – the agentic participant in a supportive community of practice.

“What is it?”

“I’m going to the Cheesemonger Invitational in New York. I sent you a text with the link. Scroll down and you’ll see me.”

I do. “You’re competing, not just attending”?!

“Yep. I feel like I have to challenge myself if I’m going to get anywhere.”

The Cheesemonger Invitational (CMI) is a yearly international competition for cheesemongers and a limited number of other related professionals. It is very selective, usually

limited to about fifty participants. It is a friendly but intense competition combined with a sort of conference including educative sessions on techniques, equipment, and industry issues as well as interactions with representatives of dairies and other cheese-related businesses. The public part of the competition occurs on day two. It is a boisterous, sometimes chaotic event that, by the end of the day is mediated by the free-flow of alcohol from participating vendors. Ashley's decision to compete as a novice, alongside so many seasoned professionals – central Cheeseworld participants at the top of their games, is a bold and confident act.

At CMI, Ashley worked alongside of, together with, and in friendly competition against cheesemongers and other cheese professionals for two days. During this time, she learned from, stood in awe of, and shared her own expertise with peers, as well as heroes and deities of Cheeseworld. She reveled in merely being in proximity to, and even more so in being accepted by these people whom she respected. The fact that she was also respected by them did not dawn on her until much later.

European cheese professionals I have spoken to have expressed awe, joy, and admiration for the welcoming, supportive, and largely democratic world of American cheese – not the little orange squares, but the growing small-scale and artisanal commercial cheese industry in the United States. They have told me that, in Europe, one is more likely to encounter cheesemakers and affineurs who are (perhaps understandably) very secretive and protective of their work. Many of them appreciate working in this environment and, in turn, provide valuable expertise to American cheese producers, and affirming, educative experiences for new cheese makers. How the cultures of the European and American regions of Cheeseworld may ultimately influence each other is not clear, but for Ashley, the way things are right now has fueled her continued enthusiasm and engagement.

Several weeks after returning home to North Carolina, Ashley received a message that she had come in fourteenth out of fifty competitors in the Cheesemonger invitational. To her the entire experience was a complete triumph.

* * * * *

Less than a year and a half before this phone call, Ashley was directionless, desperate and unsure that she would have a future at all, much less what that future might look like. Cheeseworld, as she would come to know it, did not yet exist for her.

Near the end of a year's break from a college experience that was fraught with indecision, multiple changes of major, emotional turmoil and more, Ashley was preparing to return to her life in a small but lively North Carolina college town. She had used her time in New York to decompress, work, pay accumulated bills (including back tuition), save money for the next year's living expenses so she wouldn't have to work and attend classes at the same time, and forge a plan to finish college and get on with her life. She accomplished many of these things, but in many ways was not much different from when she arrived in New York for her self-designed, self-imposed renewal process. She appeared to those around her to be headed back into a not-very-transformed set of circumstances from the one that sent her in search of a new life. She was returning to finish school.

As she web-surfed for an apartment and a job Ashley came across an opening for a cheesemonger at a local North Carolina gourmet grocery store, "the only requirement is a love of cheese." She didn't know what a cheesemonger was, but her inordinate love of cheese made this ad jump off the page at her. She researched cheesemongering and became even more determined to get this position. She called the store and spoke to the head cheesemonger who informed her that the job had been filled, but that she should come to see him when she returned to North

Carolina, because he knew *everybody* in cheese in the area and would help her get situated. She continued to work toward reentering the college for the Spring semester just a few months away. However, she knew that she had only the promise of help to find a job and that the money she had saved over the past year would not be enough to guarantee a smooth school year without at least some full-time work and the concomitant conflicts between work, school, social life and sleep.

Within a day or two of this phone call, Ashley's aunt Alexis happened upon an ad for an unpaid internship in cheesemongering. It would begin in a few weeks, at the beginning of November, and would last for three months. She suggested Ashley delay her return to North Carolina for a few months, continue working and saving money so she could, at the very least, return to North Carolina both richer and more marketable.

Ashley agreed to this with some reservations, formally applied for the internship and bought herself a notebook in preparation.

It was advertised as an unpaid internship in cheesemongering at an iconic cheese shop in Greenwich Village. When the call came to inform Ashley that she had been accepted, she was told that she would be working in the caves in a warehouse in Long Island City.

“What do they mean by ‘caves’?” and “Where is Long Island City”?

Emerging from the subway among warehouses and auto-repair shops, Ashley, notebook in hand, made her way to the address she was given and found, above a door located between loading docks in one of the low commercial buildings that characterize the neighborhood, a small oval sign reading “This is Murray's Cheese.”

She was greeted by what came to be the first two mentors who would afford a path to legitimate, peripheral participation in a community of practice (Lave and Wenger 1991) (more

accurately, a community of communities of practice) that would, before long, come to be a major focus of her life. Brian and Tess were affineurs – agers of cheese. Their workplace was built around five caves – actually cinder block-walled rooms – each with its own, very particular ambient conditions designed to nurture and support the development of different kinds of cheese. Before entering these caves, and in fact, before entering the production part of the warehouse where the caves are located, Ashley and the other interns were given hairnets, white coats and white rubber boots. They were instructed to wash their hands thoroughly and finally directed to walk through a disinfecting “moat” of bleach solution as they crossed the threshold into a world that almost instantly triggered powerful memories, emotions and associations that would cement Ashley’s resolve to somehow become a part of whatever was going on here.

Among the most positive and affirming experiences Ashley had during her college career were two work-study positions: one in a medical clinic; and one in a research lab at the University Medical Center. These positions had her working in a team involved in scientific/medical research – employing sterile technique, monitoring experimental conditions, maintaining biological cultures, collecting and recording data – all in service of work that was both real and important, and very different from the simulated reality of her college lab classes.

White lab coats; procedures designed to protect samples from contamination; cheese in wheels, blocks and truncated pyramids, stacked on incubator (cave) shelves in neat rows and columns; clipboards where data were recorded with meticulous care; sampling schedules and apparatus; corners set aside for testing new formulations and techniques. All of these and more resonated with her successful college work-study experiences in medical research facilities. But in this “lab” the sampling included tasting the product! Ashley commented after one of these early days in the caves, “I feel like I am at home here.”

This was the environment that carefully cradled and fanned the embers that grew into a fire inside Ashley and nurtured and grew a nascent cheese professional.

A DAY IN CHEESEWORLD

Of Ashley's many roles in Cheeseworld, her primary function at present, and the one that occupies most of her time is "cheesemonger." Simply put, Ashley sells cheese, but this tells only a small and misleadingly narrow part of the story. Following are three events that unfolded in a single day of cheesemongering:

Cheesemonger as consultant.

A mother of an eight-year-old wanting to expand her son's limited and repetitive diet approaches the cheese counter. She and Ashley discuss the pickiness of children. Ashley shares her own pickiness with the customer, and through a deft, deliberate, but also genuine display of proxemic and prosodic communication, includes the child in the discussion: turning to include both mother and child in her field of view; bending almost, but not quite, imperceptibly to better match the height of the child; increasing the volume of her voice to accommodate the distance within which both mother and child stood; and using facial expressions and arm and hand gestures to include child, mother and the surrounding cheese in the conversation; she recommends a gruyere blend as a substitute for cheddar in her macaroni and cheese, explaining how adding complexity to a very familiar and loved food of the child's – one that clearly from the conversation has deep roots in this mother's relationship with her son – would enable him to "educate his palate," she turns to the child, "make your mouth smarter" while still in familiar and comfortable culinary territory. Turning to purchases for the adults in the house, the mother asks, as do many customers, "What do you like best?" Occasionally Ashley simply tells the customer what she likes, but more often, a simple question: "Do you like it to be more sweet or more

smoky?” or “What will you be having it with?” or “How many people will be there?” allows Ashley simultaneously to engage the customer in the decision and educate her. Many of these are questions that have been posed to Ashley by mentors – in the caves, at the dairy, or behind the cheese counter. She invites the customer into a partnership in which each party is respected and each party has expertise that, with the other, is used to co-construct a meaningful selection and, later, deployment of cheese knowledge. Ashley views each purchase as more than an exchange of money for a bag of product. She sees almost every transaction as a relationship built around common and complementary goals from which each participant emerges enriched emotionally, and intellectually as well as materially.

Expert to expert

Shortly after the episode with the mother and the once “picky” but now “discerning” eight-year-old, a cheesemaker – a colleague from the dairy farm where Ashley also works, comes to the counter to shop for a party. This colleague is one of Ashley’s mentors, someone she respects and reveres as a professional, as a teacher, and as a friend. Their conversation in tone, language and content differs markedly from most interactions at the counter, but it still is a customer-expert interchange. Textures, ages, under/overtones, palate feel and more are concerns here. This knowledgeable cheesemaker needs advice on products from dairies other than his own. She helps him put together a varied array of cheeses that work with each other as well as the foods and drinks the cheesemaker plans to serve. Their conversation frequently compares flavors, textures, and other qualities of the cheeses in the store with those that both participants know together from their common experiences at the farm/creamery. Ashley frequently slices small tasting samples – sharing some of each cheese’s back story as she cuts: “This was made back in March so the cows were not yet eating grass, we have a younger one that I’ll let you try next.” or

“Legally, we can’t sell this one after this week, but if you get it now and let it ripen for another few weeks, it will be perfect.” Here we see Ashley as the employee and representative of a merchant, bound by law and regulation, informing her customer of the government-required expiration date stamped on the cheese. At the same time, she functions as a cheese expert displaying knowledge and experience about both the product and her current customer, a fellow cheese professional. They taste the samples together communicating through nods and facial expression as much as through their words. This cheesemaker is mentoring even now. While he genuinely needs guidance and values Ashley’s expertise, he is at the same time probing and allowing Ashley to practice the same kind of instructional talk that characterizes their exchanges at the dairy, but in this case, with Ashley as the more knowledgeable partner. Ashley also is deploying cultural capital from her work with one of her earliest mentors, Cielo, the master cheesemonger she worked with in New York. Reading the customer, anticipating needs/wants that the customer may not even be aware of, and educating that customer to make decisions *of her/his own* with which s/he will be pleased.

Marketing and educating

At the end of the work day, Ashley shared, “When he came in this evening, Gary [her boss at the cheese counter] called me aside and asked if I would pick a cheese or other item that I really like and write 100 words on it for the next store newsletter.” In her voice were the excitement of being able to share her ideas about cheese and educate the public, pride in representing a cheese department of which she was proud, and appreciation of the recognition and validation by an authority figure. “I chose *Alpha Tolman* from Jasper Hill Farm because it is not one of the everyday multitrack cheeses, but it is not so high-end that it is inaccessible to most people. It is a mid-range cheese that people can use to expand their cheese knowledge. Also, it has certain

qualities that make it accessible to a less-than-expert palate but will move that palate to a deeper level of sophistication.” Again, channeling Cielo, she works a complex interaction of economics, food-knowledge and experience with her own agenda for raising the lactic consciousness of her local community and customer base.

These three vignettes illustrate a kind of code-switching behavior that is simultaneously seamless and apparent to an outside observer as Ashley moves among customers and colleagues who are cheese experts, cheese novices and everything in between. Ashley easily moves between farm, caves, store and table and deploys knowledge production from each field in all of the others. She often expresses surprise when this is pointed out to her. As we saw in her relationships with her mentors, her explicit deference to both experience and authority reflects a degree of unawareness of the depth and breadth of her own expertise and her genuine (even though sometimes misplaced) respect for elders, experts and the credentialed that is so valued in formal educational settings. At the same time, it offers her access to the human and other resources made possible by those for whom her veneration – primarily a genuine honoring of their accomplishments and knowledge – both strokes egos and minimizes the perception of threat and rivalry.

Formal-ish classes

Another Cheeseworld venue in which Ashley practices and sharpens her craft is a regularly scheduled two-hour class that is open to all and attracts a group characterized by a diversity of experience, knowledge, interests and purpose. Ashley teaches or coteaches some of these classes and attends the ones she does not conduct.

6:45 pm; the third Friday of the month. Several tables of the Whole Foods customer service area are occupied by people...waiting. Several more are filtering in through automatic doors

from the street or from various areas of the store. They are in groups of one, two and three. Around this scene, the business of the store is continuing as usual.

Conversations about work and life are briefly, almost indiscernibly interrupted by nods, acknowledgements, and occasionally warm greetings, embraces and filling-in about events since a month prior when this scene last played out.

It is the monthly cheese class at Whole Foods – a regular part of approximately three dozen lives since nine months earlier when this series of classes began back in January. These classes are structured and conducted in a way that blurs the lines between learner and teacher, and broadens and re-delineates, in a more inclusive way, membership in the community of practice that is Cheeseworld.

At seven-thirty, one of the cheesemongers signals to the waiting “students” and they follow him through the produce department, around inviting and creative displays of cheese and prepared foods and through a door behind the cheese counter into the classroom where the sessions take place. Before the session even begins, participants pass through displays of cheese about which they have become quite knowledgeable over the past eight months, and are ushered into a usually-off-limits area of the store. This activates prior positive emotions and fuels anticipation of another positive experience.

Class participants include a core of regulars. Intermittent attendees and newcomers often come along with a regular or have some other connection to the community. This session, for example, is attended by several people from the Chapel Hill Creamery, the dairy farm where Ashley sometimes works – the two owners, the farm manager, and three cheese makers. They have come to support Ashley and to provide some insights into their own cheeses which are part of tonight’s “Southern Cheeses” theme. The attendees also include a baker and author of a book

on the science of baking, a group of foodies who, among other things, regularly cook with and for each other, and a visitor from the west coast – a former chemistry professor (There is a notable number of chemists, microbiologists and other scientists and academics who enter this world either in addition to their professional work, or as a life-changing escape from their work) – who has retired and has taken a great interest in food – particularly fermented foods.

During the course of the evening, several cheeses from the Chapel Hill Creamery are featured and, although she is very familiar with their history and production, she turns the floor over to the dairy owners and workers. They, of course, talk a little about the cheeses and the dairy, but all of them redirect our attention to Ashley, indicating her expertise and knowledge. While this reflects their genuine assessment of her, there also is a political component to this. They know that Ashley is sometimes underutilized and her abilities not fully acknowledged. They want to support and promote her work.

One of the regularly attending foodies, Peter, is a former professional wine buyer. He uses his wine understandings to make sense of cheese and how it is made. Every session prominently features Peter's questions which guide the conversation. He has taken a kind of paternal interest in Ashley's career. His questions are disruptive – they often interrogate areas that the presenters only touch on. They move the conversation away from the planned trajectory and into areas that interest him. His questions often clearly are grounded in wine knowledge. His questions, or at least the way he asks them, are impish and playful. He directs questions and comments directly to Ashley or steers the discussion into areas he perceives as her areas of expertise. He manages to simultaneously challenge and champion her. This is a role that Peter has spontaneously assumed. It breaches but does not derail the intended curriculum. Space is made for this kind

“interruption,” which encourages increased participation and, ultimately enriches the experience both for attendees and presenters.

One of the features of this (and, in fact, most of these) sessions is that the pairing of each of the cheeses with wine, beer, condiments and charcuterie is explored. This is among the most interactive aspects of the event. By the end of the first hour, enough alcohol has been consumed to loosen up the participants. The interactions become more frequent, more independent of the instructors and, often, somewhat less salient to the purpose of the session. The presenters consciously drink far less than the attendees and deftly keep enough order to accomplish their goals. Even (perhaps, especially) this element of chaos strengthens the community, increases the learning and positive emotions generated during the class which are reactivated during subsequent sessions.

No accountability. No formal evaluation or assessment. Merely a group of people committed to being educated about something about which they care deeply – and, in the process, educating each other, broadening the scope of the intended curriculum, surrounding the topic around which they are gathered with knowledge, emotional context, and deep, broad meaning.

Ashley, not yet a year into her existence in Cheeseworld is embraced by this community. Social, symbolic, and cultural capital surely support her in appropriating available resources to achieve her evolving ambitions and aspirations, among which are career, security, belonging, satisfaction, and happiness. This is an overwhelmingly welcoming community. Emotional resonance and entrainment, fueled in part by food – and drink – are apparent. This is at once a community of practice, an affinity group, a social event, and a more efficacious learning context than most institutional learning environments I have experienced over the past thirty years. This is true of these classes but is pervasive and characteristic of Cheeseworld in general.

Ashley had been a participant (and contributor) in cheese classes during her internship/apprenticeship in New York. She brings this knowledge, along with her experiences in the caves, at the cheese counter and within the formal hierarchies and structures in her internship/apprenticeship in this field, recognizing resonant structures and appropriating resources both unconsciously and deliberately to make her place and move toward centrality in this professional community of practice.

In Cheeseworld – especially in the United States and even more particularly in specific pockets like the one in which Ashley lives and works, one encounters a noticeable abundance of practitioners who are tatted, pierced, hard-drinking and bearded – attributes that likely set them apart in the parts of their lives outside of cheese. Ashley, who often refers to herself as “tat-free since 1989,” is unpierced, unbearded, doesn’t drink much and, is both female and black. This constellation of attributes *is* her quirkiness. It makes her different and allows her to fit in as a fellow non-conformist among a community of proud and assertive non-conformers. To be sure, race, gender, age and other factors can be sources of conflict and withheld opportunity, but rarely have I seen this manifested among the more central participants – the makers, and affineurs – in Cheeseworld.

A BROADER VIEW OF EDUCATING/LEARNING EMBEDDED IN EVERYDAY LIFE.

Ashley’s internship in the caves is a model of educative practice built around learning embedded in daily life. No matter what formal education we obtain, ultimately, we learn through practice. Some work requires “training,” but any creative endeavor demands a dynamic interplay between practice, practitioner and community.

Much of my formal school experience as a learner and, at least in the public schools, as a teacher has been characterized by a pervasive, hegemonic transmission model of learning and

teaching that privileges a largely unquestioned canon and set of assumptions about gender, race, class, authority and myriad other areas. In addition, the “more positivistic forms of educational science [all too commonly encountered in classrooms, approach] the world in a way that isolates the object of study [and] abstracts it from the contexts and interrelationships that give it meaning...ignoring the notion that “to be in the world is to operate in context” (Kincheloe & Tobin, 2006, p. 5). The supremacy of Western science with its claims of objectivity, universality and generalizability rarely is challenged.

Furthermore, epistemological assessments of knowledge production that challenge the “knowing mind – useful body” dichotomy and recognize the importance of physical knowledge, embodied knowledge, the role of the senses, emotions and social relationships (Crawford, 2009; Rose, 2004) are not central (nor, sadly, even peripheral) to much discussion, practice or policy making in education – even in many innovative, progressive education communities.

Physical labor, craftspersonship, sports, the arts, and Eastern medicine and wellness are among the areas where a broader, situated view of knowledge production is valued. Apprenticeship, mentoring, “learning at the elbow” of another, all implicitly recognize a mind | body dialectic that embraces a broad, encompassing epistemology.

Expanding this epistemological frame, we can place the mind | body in a social context. Learning occurs around, with, through and from others in the doing of the work. Involved are all of the senses, attitudes, emotions, as well as exchange via language, non-verbal communication, visual signals and physical contact. As we look beyond simplistic transmission or training models of learning and teaching, we quickly see a complexity often masked by the labels teacher and learner. These are roles rather than titles. As with many crafts, professions or occupations, in communities of practice organized around cheese, each participant occupies both of these roles

often simultaneously, and often without an awareness (or even an interest) in which she or he is at any moment. Lave and Wenger (1991) reject the notion of learning as a precursor to participation in communities of practice and center social practice as “the primary, generative phenomenon, [with] learning [as] one of its characteristics” (p. 34). They further emphasize that “learning is an *integral* and *inseparable* act of social practice” (p. 31). The implications of this for formal schooling cannot be overstated.

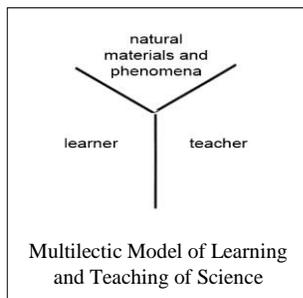


Figure 1. Hawkins' model viewed as a multilectic relationship between learner, teacher and the natural world.

Lillian Weber (1991) often described the role of a teacher in the teacher-student relationship as one of “the more educated partner” “noticing, joining with and following after” the less educated partner. Her view is very similar to what the research described here demands – a multilectic relationship (Fellner, 2015) between researcher(s), researched and reader(s) where each presupposes, depends upon and

mediates the other two. In *I, Thou, and It*, David Hawkins (1965/2002) presents a broader model of the relationships between learner, teacher and the world that identifies the thing learned as a partner in the teacher | learner relationship. He explores the interactions of learner (I), and teacher (thou) mediated by the content or curriculum (It) around which they have come together. I think that the idea can be reframed (see Fig. 1), and perhaps Hawkins has this in mind when he represents the situation as a triangle. In language that elevates the role of the curriculum/content to a partner rather than simply a mediator, Hawkins' model may be reconceived as a multilectic relationship of teacher (I), learner (Thou) and the natural world's materials and phenomena (It). Who among teacher and learner is I or thou is not fixed, and reflects the perspective of each participant at any particular moment in time. Natural materials and phenomena may not change as a result of learning and teaching, but perceptions and understandings of them certainly do.

THE SCIENCE OF CHEESE

Milk in the cow (or sheep, or goat, or any mammal) is in a constant state of flux. Conditions both in and outside of the animal leave their stamp on the milk over time. Terroir, time of year, age of the animal and countless less identifiable factors mark the color, odor and other attributes of what, from our standpoint, we think of as the product.

Once outside of the animal (and, to a lesser extent, before), the “natural” conditions that shape the milk are joined by the conditions imposed by the dairy farmer, the cheese maker and other human intercedents/interferents in the continuous and ongoing processes of change. The knowledge and understandings needed by humans to enter into these natural processes and bend them to their desires are immensely complex. Milk and to an even greater extent cheese are not unlike ecosystems with myriad and changing biotic and abiotic components in a complex system of interaction and interdependence. Observing the processes of cheesemaking, affinage and preservation/storage, it becomes apparent that the cheese professionals’ work is to harness rather than control the course of cheese production. Their task is to enter into a partnership with the natural processes already in progress.

The success of humans’ engagement in this partnership is attested to by the many and varied cheeses and other dairy products that can be produced with reasonable consistency and predictability. But what really reveals the true partnership nature of the interaction is when crisis occurs.

Visiting a number of farms, creameries and ageing facilities, I noticed that blue cheeses were not commonly among the variety of cheeses available. Inquiring about this I would almost always hear some variation of “When you make blue cheese, you end up making *only* blue cheese.” *Penicillium roqueforti* and related species, the molds used to make blue cheese, tend to

contaminate the entire facility. This can be devastating for a small operation with small profit margins. Larger operations' facilities can be designed with greater safeguards for containing blue cheese mold.

I asked Ashley about this.

“Under the microscope, blue mold looks like a dandelion [gone to seed], and like a dandelion, it spreads very easily. Bloomy rind cheeses (e.g., Camembert, brie) are our most gentle, sensitive cheeses. We watch them carefully and, whenever we see a little blue mold on them, we watch them even more carefully. Blue mold is less of a problem and less of a concern in the other caves, but the bloomy rind cheeses are like kids – they get dinged up a lot and they're delicate.”

Despite the care and the consistency of hygienic procedures in the caves and surrounding facility, during Ashley's internship there was one major blue mold contamination incident.

“Leading up to ‘the discovery,’ we began noticing more and more blue mold in the bloomy rind cave. We thought that a visitor or even one of *us* might have contaminated the room accidentally. But, when we opened up the ventilation system, we found that the air filter was *full* of blue mold. Brian immediately shut everything down. We salvaged what we could and moved it to the drying room [a kind of multipurpose cave used for storage and other affinage activities]. The rest – and there was a lot of it – we threw out.”

I asked, “Was the contaminated cheese inedible”?

“That's interesting. In the US it can't be sold. In Europe, there are fewer regulations...or the regulations are different. There, it is not unusual to see non-blue cheeses riddled with blue mold. People here just won't buy it. Maybe because cheese is so much a part of the culture in France, Italy...all over Europe, they understand that mold is naturally part of the process. Here cheese

production is much younger. Government regulations are already in place. The problem is a combination of FDA regulations and consumer demand.”

The field did not develop over centuries, even millennia, the way it has in Europe. The explosion of artisanal and small-scale commercial aged cheese production is relatively recent. Federal and state regulations govern it as they govern all commercial food production in the United States. In recent years, a number of conflicts between cheese importers, cheese makers and cheese sellers on the one hand and the FDA on the other have arisen around the use of raw milk, the ageing of cheeses on wooden shelves, and limits on the ageing duration for certain cheeses. Some of these clashes between producers and regulators may seem understandable, like the complete ban on the import of *Casu Marzu*, a pecorino-like cheese whose flavor and texture depend on the presence of live maggots at the time of consumption. In 2013, importation of Mimolette, a cheese whose distinctive qualities rely, in part, on the work of cheese mites, fell victim to proposed FDA regulations that would limit the presence of the mites to six or ten per square inch. This restriction, if implemented, would virtually eliminate the importation of Mimolette. As it was, the regulation left quantities of *Mimolette* quarantined in transit to the United States and the “Mimolette War,” which lasted over a year, rose to notice in the popular press both in the United States and in Europe (NPR, May 11, 2013; Save the Mimolette, 2015, June 11).

The debate over the use of wooden shelving on which cheese is aged was a less dramatic, but ultimately more serious crisis as it threatened to block the import of almost all aged European cheeses. The bacteria that process types of cheeses and that characterize the cheeses of different producers reside in the wooden shelving and are part of the process of affinage. However, they

seemed unclean and unsafe to regulators in the United States. Ashley speculated on some of these issues:

“Here in the US, blue and green are colors people associate with rotting food. Americans fear and are disgusted when blue and green molds grow on cheese or any other food. But they eat brie! And brie is covered in mold...but it’s white. As far as I’m concerned, a little color never hurt anyone.

“I think the issue with Mimolette occurred because there already were problems with the import of raw milk cheeses and mimolette *also* has mites. It’s a double whammy. I think that these two things combined made it a target for regulation. Most of us think that the problems with wooden shelving, raw milk, organisms involved in making cheese – things that aren’t a problem in Europe, where they have been making cheese forever – might be a result of the big American cheese manufacturers trying to protect themselves from a new market. This has happened with craft beer also. The big breweries first tried to put the small craft producers out of business, then they began buying them up. I think that ‘big cheese’ is able to put a bug in the FDA’s ear and cause them to crack down on the smaller importers and producers.

“After [the contamination crisis and subsequent clean-up], our policies and procedures changed dramatically. I’ll have to go back to my notes to give you more details [Ashley’s notebooks continue to be a resource to her], but we continued the handwashing, we paid more attention to cleaning our boots. We were a lot more careful.” (A. Morton, personal communication, December 30, 2016)

The frequent cleaning, changing gloves between rooms, and using the bleach bath to clean boots all are visible signs that the more stringent regime was still in place. That the procedures are embedded in the culture of the caves was evident on a visit to the facility a year or so later.

We were being shown around by new affineurs as both Brian and Tess had moved on to work elsewhere. I remember being the last of five of us leaving one of the caves and reaching for a doorknob to close the door behind me. One of the new interns quickly moved between me and the door and pushed it shut with an elbow. This subtle, automatic, almost balletic maneuver demonstrated a constant and consistent vigilance around the processes and procedures as well as an awareness of the lack of such in the outsiders who pass through the caves. Adjustments had been made and a new equilibrium in the symbiosis between the mold and the affineurs had been achieved.

Embodied knowledge.

“Check out these guns.” Ashley took to showing off her biceps and could even be seen admiring them herself frequently during the day. It was not simply the muscles, but the shared symbolic capital that identifies her as a citizen of and central participant in Cheeseworld. “Cave arms” as they are known to “cave dwellers,” as affineurs often refer to themselves, result from the regular washing and turning of large wheels of cheese that can weigh as much as forty pounds in the caves. Cave arms are not merely symbolic, however. Their development is accompanied by the ability to create and employ more efficacious cheese-care techniques and concomitant higher rates of production. Mild competitiveness in this and other areas, among both seasoned and apprentice affineurs, support community building, mutual respect and the development of cultural capital that served Ashley as she began to practice her craft in other fields within Cheeseworld.

Changes to her body accompanied changes to the cheese she cared for and guided toward readiness. And it was not just her arm muscles. Less visible than cave arms, but no less significant changes involved embodied knowledge in the form of increased sensory

sophistication. Taste, smell, sight, touch and even hearing began to enable Ashley to identify and monitor subtle changes in the cheeses with which she worked. Part of the apprenticeship, because it was part of the work of affinage, was regular sampling of the developing product with the master affineur. A corer, not unlike the tool a forester uses to examine growth rings of living trees was used to extract a millimeter-thick cylinder of cheese that provides an edge-to-center view of what is going on inside of a cheese wheel. Rind, creamline and paste can be seen, smelled, tasted and felt – all of these are done with seriousness and concentration that leaves the outside observer feeling like he is in a land where he doesn't speak the language and doesn't fully understand the customs. The professionals – newbies and old-timers alike – vocalize (*hmmm, umhmm, nice, wow*, etc.), which they accompany with knowing nods as they look the cheese over. Frequently, one of the master affineurs will provide direct instruction, crumbling some of the product between his fingers and offering the core for the apprentices to do the same. Sometimes an affineur will produce a pocket knife and cut into a wheel, placing the slice on a board and dividing it into as many pieces as there are people present, scooping each small sample up with the knife and silently advancing it toward each member of the group huddled in a semicircle around this activity. Talk revolves around the age of the cheese, comparisons to other wheels (both past production runs and current stock) time of year, practices of the dairies of origin and personal reactions. During these conversations, masters' and apprentices' insights, opinions and questions are received attentively, seriously and without judgement, often elucidated with facts and connections borne of experience and of the affineur's microbiological background. All of this, along with personal reflections, drawings and other information made its way into Ashley's ever-present red cheese notebook.

The notebook

Taking notes is a “school” practice that Ashley employed from the beginning of her apprenticeship. The only preparation she could think to do before the start of her apprenticeship was to purchase a new notebook. This was symbolic of a new beginning and the readiness for a new “page” in her life. The notebook became a major part of her identity and a signifier to the community in the caves (and later, in other fields) of her enthusiasm and commitment to this work. In it Ashley kept copious notes on techniques and processes illustrated with sketches, diagrams and tables. Beyond this, there are reflections, personal thoughts, plans and ideas. It is a uniquely three-dimensional window into, and record of the interior and the exterior; the public and the private; the deep and the shallow; the emotional and the tangible. Although the book often was the subject of jokes and mild teasing, it is clearly part of what earned Ashley respect as a newbie in Cheeseworld. On those occasions that the book was misplaced or temporarily lost, all hands mobilized to find it. In time others began to carry notebooks as well. This first notebook and its successors have accompanied Ashley as she has travelled in Cheeseworld. They are frequently accessed reference volumes and generally are regarded with admiration by colleagues in the various fields she inhabits in Cheeseworld.

FOR EDUCATORS TO CONSIDER

Ashley’s education history – from infancy and pre-school, all the way through college and professional life is a patchwork of success, failure, completion, false starts, validation, judgement, reward, punishment, recognition, blame, joy and sorrow.

In nearly sixty years as a learner/student and over thirty years as an educator at all levels, I have seen educational practice that is largely a language-based, knowledge-transmission affair. Even science courses that directly address physical phenomena which can be experienced, measured

and engaged with, often are offered as lecture classes with separate laboratory sections where students complete directed, simulated, “hands-on” exercises designed to illustrate and illuminate the content they encounter in the lectures. Of course, educational practice is quite variable from institution to institution, but the above described situation is overwhelmingly common.

“Non-traditional” educational models, including coaching, apprenticeship and learning on the job, as well as self-directed programs that we often associate with hobbies and personal interests also sometimes reflect the epistemological and axiological stances we see in formal educational settings. However, among these less-traditional approaches we find far more direct engagement with the materials and phenomena of the natural world. Trevor Marchand (2008) in his research on craft-based learning ponders the “nature of embodied communication and knowledge.” He asserts that, the learning of skilled physical activities, is affected via largely non-verbal communication and negotiation between practitioners and that “learning is achieved primarily through observation, mimesis and repeated exercise” (p. 247). Therefore, learning – perhaps better conceived as knowledge production – is inextricably bound to doing, and doing is a full-engagement activity. Emotions and senses are engaged in working closely with, learning (from/alongside/at the elbow of), teaching, and even merely being among members of the community of practice.

In Ashley’s experiences in Cheeseworld, both in the earliest stages described here and in subsequent professional settings, resonance with her lab work at college activated emotions that encouraged and supported the achievement of a set of rapidly evolving personal and professional goals. Although much about the caves was new to her, the cultural capital engendered by her lab experiences resulted in a level of acceptance among the central figures in this new world that made success (and, perhaps more important, her recognition of that success) a more prominent

feature of her social and emotional landscapes. Her identity previously dominated by struggle and frustration began to be characterized by greater and greater levels of satisfaction, success, (sometimes uncontrollable) joy and the agentic pursuit of possibilities. In contrast to her experiences in the medical research labs where she had worked and studied, in the caves, she was *in* the work, data were not merely numbers read and carefully recorded from the LCD screen of a scientific instrument (although such instruments were part of the processes in the caves), but data were experienced with the body – the senses – and subjected to a much more subjective, interpretive analysis. Ashley’s knowledge production and her path toward centrality were (and are) far more entwined in emotion and social relationships than she had previously encountered in the formal institutions of school and work. Without fully grasping it, she revealed an emerging recognition of this difference early on when she said, “Brian isn’t a teacher, but he is the best teacher I ever had.” And, “He includes you and really listens to your opinion, even though he knows so much more.”

Hegemony of Formal Education

Ashley has returned to school full-time to obtain, at a minimum, her undergraduate degree. Many of those around her have encouraged her to get this degree in spite of her success in Cheeseworld: “You have to finish.” “You can’t get anywhere without a college degree.” Her own deference to authority and to societal “norms” magnifies these admonitions. She is determined to earn her credential. Both self-doubt and the very real gatekeeping function of a college degree raise the possibility of unforeseen and insurmountable obstacles in her pursuit of a life in cheese. Considerable effort and sacrifice accompanied her return. She had to give up her secure full-time job and most of the time she spent at the farm/dairy. Although several faculty,

advisors and counselors have been very supportive, the college has provided her with a number of requirements, some seemingly very arbitrary, to return to full-time study.

She is in undergraduate classes learning more and getting better grades and feedback than ever before. She approaches each assignment in almost every class, no matter what the subject, in the context of her recent years in Cheeseworld. She recently said, “I don’t understand why they [the other students in the class] do so little work and don’t seem to care about it. It’s their major”!

For her first go-round at college, she was prepared for a continuation of high school where she was told what to do and when to do it and then reminded over and over that it had to be done; she was not prepared for the responsibility to manage time, social life and sleep without a safety net. A couple of years of work and development of purpose have changed everything. What the college offered, often seemed to her to be arbitrary and irrelevant, but has been imbued with significance in the context of her in-the-world experience. Now the completion of her degree has become merely a minor obstacle, and, at the same time, taking the classes has come to be a truly enriching experience. Of course, setbacks, major and minor, often invoke patterns of behavior and thinking that center the degree/obstacle in place of her success in Cheeseworld. The hegemony of the academy and concomitant pressures, both external and internal, experienced by Ashley are most apparent at these times.

During a particularly stressful finals week, Ashley was struggling over a major paper upon which she felt her grade, and her status as a full-time student on track to graduate by the end of the summer were in jeopardy. She had had more than a few nights of little or no sleep and was feeling a bit hopeless. The following exchange reveals that actual progress or success does not always outweigh perceived or, at most, possible failure:

ME: “Don’t worry if it takes a little longer to get your degree. You are in demand for your expertise in the work that you do. People seek you out, not because they like you, not because of your connections, but because they value and respect your work.”

ASHLEY: “I’m tired of going to school. I can’t take it anymore. I need it to satisfy the gatekeepers. I need it to move on with my life. I need it to validate my own worth. You have no idea what it is like.”

Ultimately, however, at these times, she generally has been able to re-balance these forces and re-focus herself on attainment of short and long-term goals. A few days after our exchange, Ashley, still unsure of the outcome of her paper and the rest of her finals, was able to recognize that, in the past three years, she had jettisoned many of the attitudes and behaviors that proved to be impediments to her progress through college and obstacles in other aspects of her life, and that she had since been remarkably successful in most of her endeavors both academic and professional. But it is clear that a lifetime of measurement and evaluation by other’s standards – even when apparently irrelevant – looms large in Ashley’s estimation of herself and her accomplishments. In addition, that these attitudes prevail among most of the people in and around her life serves to amplify and center the doubt and fear that camouflage the remarkable story she is (and I am) constructing.

As far as her professional work, Ashley’s studies, as she completes her undergraduate degree, are likely largely beside-the-point. Their completion will neutralize her worries about gatekeepers, and she is bending the coursework toward surrounding her professional knowledge production with additional meaning and context. But apparent from discussions with her is that she still feels a need for the symbolic capital associated with a degree from a respected educational institution. This is especially acute as she lives in the state and the town where the institution is located and where association with the school (and its athletic teams) is an almost sacrosanct imperative.

Beyond this, however, Ashley is exploring the possibility of spending her last semester as an exchange student in France and combining this with engagement with cheesemakers and affineurs in what, even in the American part of Cheeseworld, is seen as the gold standard. [Note: as of the date of publication, Ashley has completed her degree and has relocated to France.]

In a nutshell

In November of 2013, Ashley took her first steps on a path to a meaningful, fulfilling future. This was the result of her discovery of a community of practice, a somewhat informal educational situation, a self-selected affinity group and an obsession – the Caves Internship at Murray’s Cheese. This turned out to be a portal into Cheeseworld.

After a lifetime of formal education that afforded her access to skills, information, intellectual tools and practices with which to make sense of the world, but ultimately did not serve her well as a means to a productive and meaningful life, she entered (and was welcomed into) a community characterized by a diversity of interests, backgrounds, ages, motivations and goals that functioned to produce high-quality results that are valued by a broad range of people. It was a world that recognized, appreciated and exploited her enthusiasm so much that intrinsic motivation unlocked the best qualities of her intellectual, social, ethical, moral make up.

While the world unfailingly impinges on all of our lives, the kinds of experiences and the foundation in this world and the lasting personal and professional relationships ensure that, for Ashley, as well, I expect, for the other members of this community, there will be opportunities to build a life based on her own interests rather than simply economic considerations. Science, culture, social life and business intersect in Ashley’s experience in a way that more closely

emulates human social situations than it does our compartmentalized way of life that separates work, play, family life, and, most glaringly, education from each other.

The dissonance between the affordances presented in Cheeseworld and the societal pressures around success, security, and family apparent in the other fields in which Ashley moves, make the part of her story not yet told and, not yet lived obscure and unpredictable.

Making space for difference

For some, perhaps for most, readers, this non-prescriptive call to action will be unsatisfying. However, the story presented here demands not merely identifiable changes in the way we educate or in the way we bring people into the world of work, but rather the terraforming of a world/landscape with a variety of affordances, ways of access, and pathways that reflects the diversity of would-be participants/learners, and the diverse paths that people follow/forgo as they find their way in the world. A world that provides space even for those whose differences and uniqueness cannot be imagined or anticipated. I am calling for a change of mindset among learners, teachers, parents, families, employers, and policymakers that will welcome all comers, a change that ultimately opens the possibility that each of us will be able to realize our evolving dreams and goals, one that allows all of us to derive the benefits that our fellow citizens' diverse and varied talents, skills, interests, proclivities, and quirks may provide for us.

CHAPTER 3

HOW DO YOU *KNOW* THAT?: ON SCIENCE AS A KNOWLEDGE SYSTEM AMONG KNOWLEDGE SYSTEMS

The purposes of this chapter are threefold: The chapter will serve to illuminate some of the underpinning theory and frameworks for my research, including phenomenology, hermeneutics, situated learning, and authentic inquiry which are described in chapter 2; It traces an evolution in the way I make sense of the world; It locates Western science among the ways we come to understand the universe.

Largely mediated by a concentration in science in my formal education, my sensemaking has, at times, brushed very closely on scientism and positivism. The epistemological implications of my education are necessarily mediated by my practice as a long-time science educator. To me, the social “sciences” were suspect and surely could benefit from the lessons of a scientific approach. How could objectivity and generalizability fail to improve the work of the non-natural scientists as they struggled to reveal the truths of human social life? Over time, my aspirations have shifted from being a scientist to being a social scientist to eschewing membership in one camp or another and simply trying to employ a bricolage approach comprised of any and all tools available, when and as appropriate, to make contingent and dynamic sense of the world in ways that will benefit myself, and my partners (coresearchers, colleagues, students, the general public) in the sense making enterprise.

BIOGRAPHY OF A SCIENCE EDUCATOR: INDOCTRINATION TO REPROGRAMMING

Just six weeks younger than Sputnik 1, I was a beneficiary of the consequent massive investment in science education in American schools. Science has been central to my professional life. It has

shaped the way I see the world, and still pulls at me even as I often push back at it. Western science has, currently does, and likely always will mediate my interactions with both the natural world *and* the social world. Western science's focus on natural phenomena, its simplicity, its clean, precise approach to the unknown, its elegant solutions to the apparent messiness of the physical universe, its relationship to "progress" – revealing and unlocking more and more of the hidden Truths of the universe – are attractive and seductive. These ideas and attitudes, shaped by the marvels of, among other things, cosmology, plate tectonics, evolution, genetics, and the complexity and interdependence of ecosystems, are products of historical circumstances specific to the past half century or so, but, perhaps not unique in the long history of human efforts both to understand and to control the world and its people.

Science fiction of the mid to late twentieth century with its threats | promises of nuclear apocalypse, alien invasions, "mad" scientists, utopias and dystopias has worked all of these angles that are reflective of the times but also are conscious propaganda and social manipulation tools to promote fear and hatred of the Soviets, and suspicion of scientific "progress" as, at the very least, a double-edged sword, giving and taking at the same time – often both the source of our problems and the only solution.

Benign, almost-lovable "absent-minded professors" stood in contrast to the Dr. Frankensteins and other evil (or at least obsessed to the point of destructive behavior) scientists, and in the 1960s, it seemed to me that these "good guy" scientists were in the ascendency. Although attitudes have changed, the privileging of science over other ways of knowing still is extant. Today, the distrust and discrediting (at least in the United States) of climate scientists is a simultaneous rejection of science in favor of "common sense" and a fear and reverence for science as an all-powerful tool of the left.

The early morning television show, *Modern Farmer*, the space race, the green revolution, the 1964 World's Fair, *Popular Science* magazine – these are among the propaganda tools used successfully to indoctrinate me and many of my generation. The DuPont corporate slogan often remembered as “Better living through chemistry” (and, in fact, all of the sciences) promised us a better world just around the corner. The evidence? Formica[®], Teflon[™], high-fructose corn syrup, color television, inexpensive air travel... I bought in as did many in my age cohort. Interestingly, in the early 1980s DuPont changed its slogan to “the miracles of science.” A polysemic acknowledgement of other knowledge systems? Probably not.

UPENDING THE WEST-IS-BEST HEGEMONY

The shedding of illusions of objectivity, universality and generalizability is essential but challenging. They are alluring concepts woven around Western science practice. They fashion for us a simplified (reduced) world that makes for easy comprehension. But easy comprehension of what? The complexity of the world(s) in which we live demands an acknowledgement of the frameworks – ontological, epistemological, and perhaps most important, axiological – we use to forge our understandings and to make our judgements. These frameworks draw us to the specific events on which we tend to focus. They mediate the particular questions we choose to ask, and, consequently the kinds of knowledge we produce and the meaning with which we surround our observations and the knowledge we generate.

Even when we accept all of this, we must be aware that this system of knowledge production is not set in a static environment. The world – both physical and social – within which we function is a dynamic interplay of uncountable, frequently unidentifiable factors all in play all of the time and, in fact, each of them changing as time changes. It is a complex system of complex systems.

Our research goals are not to set rights and wrongs, yesses and nos, nor are they to extract or reveal generalizable Truths from “objectively” generated and analyzed data about randomly chosen, “representative” samples of the general population. Instead our goals are to engage with people, situations and events that interest us precisely *because* we are each unique and non-random people. We ask questions, and, informed by the responses, we ask more questions, all mediated by an evolving process of knowledge production. It is not the answers that confirm our suspicions that usually interest us, but the singularities, the contradictions, the unconformities that grab our investigative trajectory and deflect, twist, recurve...that send us in a different direction, one that we could not have predicted or even imagined before it presented itself. This new direction also may (or may not) be short-lived. I know this sounds like I am describing (and advocating for) the researcher as an aimless sort, stumbling through the world without direction and without identifiable purpose. However, it is not me as a researcher that begs reinterpretation here. Rather it is the complexity of the shifting social environs in which the researcher finds himself that must be recognized and embraced if one is to make sense and generate small-t truths that will benefit the participating researchers | researched as well as, perhaps, a larger audience.

Similar circumstances generate very different understandings and “conclusions” based on one’s ontology, epistemology and axiology. One cannot *control* the world; one cannot *reduce* the world and expect to produce much useful knowledge – knowledge that will benefit those involved in trying to make sense of that world. Western science, like all knowledge systems, rests on assumptions and is defined by limitations. These are not weaknesses, but strengths in the same way that the tracks, while restricting the movement of a train, are essential to its efficacious operation. However, these strengths are, in fact, strengths only if their full, multidimensional natures – including boundaries – are recognized and acknowledged. Western science can no

more predict the longevity of a marriage, than acupuncture can safely land a rocket on Mars. Each knowledge system has its place, its utility and its strengths. It is when we try to elevate one of these tools to the status of universal and generalizable, or we misuse the tools we have to do things for which they simply are not suited, that we are doomed to obscure rather than illuminate.

WHOSE KNOWLEDGE IS IT?

Just as Western science practice is hegemonic and privileged as a way of knowing, the knowledge produced via scientific processes also is characterized by appropriation and exploitation. Local knowledges, Indigenous knowledges, “alternative” knowledges all are superseded by, supplanted by, appropriated by, or evaluated by the standards of practitioners and adherents of Western science as the supreme knowledge system. Positivism and cryptopositivism not only demand for Western science practice authority over phenomena within its own domain (Kincheloe & Tobin, 2015), they tend to colonize other knowledge systems and require fealty from those who think, practice and live according to other considerations (Cobern, 1996; Kawasaki, 1996).

For example, Thomas Jefferson kept gardens at Monticello. He is known for continuous experimentation and innovation of agricultural practices and techniques that enhanced his crops and his productivity and are, in some cases, still in use today.

In conversation with one of Monticello’s scholars, as he talked about Jefferson’s frequent visits to these gardens and the resulting innovations, I asked “Who did the day-to-day planting, cultivation and harvesting of the plants in these gardens”?

“The enslaved people of Monticello were the gardeners,” he answered, and, anticipating my next question, “Jefferson was curious and interested and probably had plenty of ideas that he discussed with the enslaved gardeners, but it is likely that the techniques and the day-to-day

observations of any agricultural innovations were the product of the gardeners and was surely, in large part, derived from their experience and traditions brought from Africa and from the Caribbean” (Brandon Dillard, personal communication, August, 2015).

The positivistic Enlightenment machine devoured, incorporated and subsumed the knowledge(s) of the non-dominant populations of enslaved people and (re)presented it as the fruits (literally in some cases) of modern scientific practices.

In some ways, this parallels the way the academy and the government appropriate various local, Indigenous and other knowledge systems through schemes of licensing and credentialing. Although positioned as recognition and inclusion of these knowledges, this process necessarily designates experts, thereby anointing them, transforming others into outsiders and marginalizing them. This circumstance shapes crafts, arts and professions through forces that are, at least in part, external to the practice of those fields.

WORKING TOGETHER...AND APART

Ashley and I are products of American education and lifetimes of American existence. We are a generation apart, of different racial, ethnic, cultural and, to some extent, economic backgrounds. Our differences often play out as mild conflict leading to discussion, argument and, ultimately, agreement...or not. The result of these encounters is a more multi-dimensional picture, richer text and a greater understanding of our own and each other’s ontological positions. Of course, what happens during our conversations is not the end of the story. Our words, our ideas and our simultaneous, parallel knowledge production continue when we part and take our new understandings out into the various fields that comprise our lives. The meaning(s) our conversations bring to her story are persistent as they shed light on our experiences and the experiences of the readers of this work. They also are ephemeral as we and our conditions

change over time. One body lives the story; two mouths and four ears, (re)construct (the meaning of) the story; ten fingers commit the story to an artificial, illusory permanence on simulated, electronic “paper;” hundreds of eyes absorb and half as many minds reproduce and transform the story providing it with new meanings. This process ensures that the story’s life is fraught with complexity and contradiction. It recognizes, acknowledges, embraces and learns from the simultaneous multiple, non-static nature of reality.

A PLACE FOR SCIENCE

Making sense of the natural world is essential to the survival of *all* living things from prokaryotes to primates. What “making sense” means, however, deserves some interrogation. All organisms respond to environmental conditions and phenomena in ways that allow them to survive, thrive and reproduce both as individuals and in groups. Humans (and likely, to some extent and in ways we might not understand, at least some other organisms) go way beyond mere survival. We are curious. We want to know. We want to understand. We want to push beyond necessity. Western science is a way of making sense – of knowing. It is a very particular, peculiar, and, according to Lewis Wolpert (2000), unnatural, counterintuitive way of knowing. From its roots in natural philosophy, it always has examined itself, pondered its fundamental tenets and principles, recognized its foundational assumptions, and questioned the legitimacy and efficacy of its means and methods. However, while science and scientists often have been reflective and critical practitioners, outsiders to the communities of practice that comprise the world of professional science, often have elevated science from a specific way of knowing about *some* aspects of the universe, to a way of knowledge production about a much broader body of phenomena and ideas, and, ultimately, to *the* way of knowing both the natural and social aspects of our world.

The Enlightenment-era individuals who transformed natural philosophy into modern science were involved in many areas of inquiry into the world (e.g., Isaac Newton's copious religious writings). However, the birth of modern Western science was accompanied by a secularizing (or, at least, an un-churching) of daily life. By this, I mean that there was a growing separation between attempts to understand the natural world from attempts to know the world of people. This, in effect, amounted to a deification of rationality.

It is essential that we re-establish science's purview, its strengths, and, perhaps most important, its limitations and weaknesses in order to benefit from its practices and to protect ourselves from misguided, and in its extremes, dangerous and destructive scientism and positivism that are pervasive even today (Kincheloe & Tobin, 2009).

We often order the world by fitting its components into neat, mutually exclusive categories or groups. People often are allocated or self-sorted into groups based on beliefs, affinities, and, of course, gender, race, and class. My background, and my location in the "science" camp is an example of identification imposed by both internal and external forces.

Once grouped, we are urged, often strongly, sometimes coercively, to choose sides both personally and professionally. Schools do this to us by their very design – dividing knowledge production into subjects, even dividing knowledge about the natural world into *different* sciences that often are incongruous and that tend to become more divided via allopatric processes. Then we group study of the natural world with math, separate it from the arts and the social "sciences" until, for most of us, it is usual to see no connections between the social and natural worlds. We see the natural and the social as different domains. The hegemony of our Western science approach encourages us to ignore emotions, relationships and other social factors in science and to commandeer scientific practices to explore and explain social phenomena. In both cases, we

minimize the workings of social life and privilege scientific analysis of all aspects of our universe.

The beauty of science with its claims of objectivity and generalizability, its elegant solutions, its reduction of phenomena to variables that can be measured and controlled, its promise of revelation of universal Truths, have shaped my formal education and much of my professional life. These things also have seduced the general public into accepting science as having the ability to prove and to be settled. Science has been transformed from a way of knowing into an ideology (Carspeken, 2015). Science, as an ideology, provides the possibility of anti-science. Climate change, evolution via natural selection, fluoridation of municipal drinking water, vaccination and other concepts and practices associated with scientific inquiry are viewed as suspect, not for reasons within the practice of science, but as matters of belief (although these beliefs often are dressed in scientific clothing – e.g., creation science): “First they said that eggs were bad for you; now they say they are healthy. Scientists just can’t make up their minds.” “Scientists can’t agree on global warming.” Both of these attitudes reflect fundamental misunderstandings of the nature and practice of science.

TWO PERSONAL REVOLUTIONS

Practitioners often, and teachers overwhelmingly, of Western science – what we often refer to as the “hard” or natural sciences – harbor illusions of objectivity, and the ability to reveal absolute Truths. Throughout the history of Western science and of natural philosophy that preceded it, there has been a tradition of wondering, questioning and challenging both *what* we know and *how* we know what we know. Epistemological and ontological stances are dynamic and ephemeral. In the 1960s, Thomas Kuhn challenged the then current paradigms and made a case for paradigm shifting as the norm. Western science (as it overwhelmingly is practiced) tends to

center and privilege incontrovertible rules. Phenomena that do not comply with, or perhaps even directly contradict those rules, often are classified as “in need of further study” or “not yet fully understood.”

Kuhn refers to this as “normal science.” He suggests that as more and more phenomena resist exploration via current paradigms and as more and more phenomena present the need for anomalies in theory and contortions of science practice to bend the world toward sense making, the field becomes ripe for a paradigm shift which is ushered in by the appearance of a credible new paradigm which more satisfyingly addresses previously incompletely comprehended phenomena and often reframes science’s understanding of previously “understood” phenomena. Western science willingly perpetrates (takes part in?) a hoax or deception until a new, viable framework asserts itself so powerfully that it must be accepted. Science rewrites itself right back into the illusion that the new paradigm is somehow sacrosanct, logically fits into the West-is-best mindset and eventually becomes the new, retrofitted reality. “Settled” science becomes unsettled and then settled once again (Goldman, 2006). A stepping back reveals this cyclical self-deception for what it is and reveals science as *a* way of knowing rather than *the* way of knowing.

From this perspective, it becomes clear that Western science must be viewed as a way of knowing that is not fixed nor universal. Beyond this, and perhaps more urgent, positivistic notions of Western science principles and practice as applicable in the human/social sciences must be challenged and recognized as oppressive, hegemonic and quite likely dangerous.

Mitch’s Revolution

This dissertation documents, in part, my own paradigm shift from an almost unquestioning adherence to Western science thinking to a situating of Western science as a knowledge system, both extremely powerful and extremely limited, among other knowledge systems.

Armed with this realization, my education has become a constant and continuous revelation of how little I know. This reverses the pattern of a formal education, most of which was predicated on a belief (née understanding) that everything I did contributed toward the building of a body of knowledge and understanding in me that constantly was becoming both greater by accretion *and* more definite – now I see it as a non-linear, evolutionary and revelatory process that is complex and that leads not to an increasingly perfect knowledge of the world, but to an increasing awareness of the enormity – infinite, yet still growing – of what is not known/understood.

The light generated during the knowledge production that has occurred during the current research shines further and further into the distance illuminating and revealing how much more I don't know. This is at once intimidating and exhilarating.

I am sustained at the CUNY Graduate Center because there I have found a community of practice that accepts and, in fact, welcomes difference. In the other fields in which I (and Ashley) operate – notably and counterintuitively, in *educational* settings – these differences often are not valued or are even actively disdained and discouraged.

Ashley's Revolution

Ashley was never science-focused. She had interests in literature, sports and music and always was a very social person. When she reached college, she began to work toward a degree in some medicine-related field. She wanted to “do something that would help people,” and her academic history offered no reasons that she could or should not pursue such a course of study.

Plunged into a schedule of mathematics and prerequisite science requirements, her non-academic activities began to conflict with the kind of time, energy and focus required by her courses. She stubbornly adhered to her intentions in medicine even as she began to fall further

and further behind. The two bright lights in the gray fog of her first attempt at college were work study opportunities in medical facilities – one involving cancer research at the University Medical Center and the other in a private clinic for people on the Autism spectrum. Here Ashley encountered the kind of laboratory and clinical work that brought the abstractions of her science, and mathematics into use in real-life situations. She thrived in these positions that enabled her to apply her lab skills, her people skills and her work ethic toward making the world better for fellow human beings.

As addressed in chapter 2, these experiences found resonant structures in the affinage facilities – the caves. Although the world of cheese had inherent qualities that were attractive to Ashley, the resonance with her laboratory employment activated inclinations, emotions and easy competence that opened Cheeseworld as a possibility that Ashley was ready, even eager to pursue.

This ability to reside in a science-y world with practitioners of science, yet still be in a very collaborative and social environment was an awakening for Ashley. She happened upon an industry and a community of practice that encompassed two worlds that outsiders often perceive as incommensurable – two worlds in which she wished to be at home.

KNOWLEDGE SYSTEMS: COMPETING OR COMPLEMENTARY?

Part of the hegemony of Western science is to set itself apart as a, or even *the*, way of revealing the world's fixed Truths. Scientism and positivism cannot be acknowledged, because they don't exist – they *can't* exist because science, as it has come to prominence in Western culture, does not question itself. It characterizes other ways of knowing as religion, mythology, superstition – ways that fearful and ignorant human beings seek to explain the unknown to allay their fears and to exercise some control over the perceived dangers of the world. Scientism and positivism

constitute a kind of scientific exceptionalism which ignores any need to situate itself, but rather establishes itself in place of, in opposition to or, at the very least, above other ways of knowing. It characterizes these other knowledge systems as rigid, irrational, unaccommodating and always, to some degree, illegitimate.

Of course, other ways of knowing also may at times claim supremacy or singular legitimacy, but, even the church – often cited for its opposition to the natural sciences, particularly when the subjects of their inquiry overlap (see Galileo and Scopes on the one hand and Bishop Ussher on the other) – allows for the existence of complementary knowledge systems. In his papal encyclical, *Fides et Ratio*, John Paul II (1998) made a case for complementarity of multiple ways of making meaning:

Faith and reason are like two wings on which the human spirit rises to the contemplation of truth [...]

In both East and West, we may trace a journey which has led humanity down the centuries to meet and engage truth more and more deeply...” (p. 1).

Citing, among others, Jainism, Buddhism, and Greek philosophy, the document frames knowledge production as a “quest for truth,” notably eschewing the definite article before the word truth. While the church ultimately claims the superiority of its own evolving truths, it nevertheless acknowledges other ways of knowing that Western science so often discounts.

The history and evolution of the knowledge system that we call modern Western science is, in many ways, a series of struggles or dichotomies: It is a search for Truth or for truths; Bacon’s privileging of experience versus Descartes’ inclination toward the mind; knowledge of nature as universal, necessary and certain as opposed to knowledge being particular, contingent and probable. During the later years of the twentieth century, struggles over these kinds of opposing views, heavily infused with political, social and philosophical implications, often are referred to as the science wars. The very existence of these arguments; the ebb and flow of rationalism,

sophism, empiricism, instrumentalism, pragmatism, idealism...give the lie to positivistic epistemological notions of a world, both natural and social whose Truths are, or even can be, revealed by scientific methodology.

So, here in the twenty-first century, we sit with a hegemonic way of knowing the world that, in many respects, defines us, that is built on conflict and contradiction and at the same time, claims to be *the* way to generate knowledge. Joe Kincheloe and Kenneth Tobin (2009) highlight the ironic condition that modern “scientists and philosophers of science do not endorse the dated and misconstrued methods of science that the social sciences have appropriated” (p. 514), while social scientists to a large extent embrace scientism with neophytic fervor.

Must knowledge systems compete? Can they coexist? Can each be deployed where and when appropriate? Can multiple knowledge systems, even when contradictory or incommensurable, simultaneously, even synergistically, be applied in our efforts to make sense? The current research makes a case for affirmative responses to the last three of the preceding questions.

Another question that this research seeks to address is, *does science merely explain the world or does it reveal fixed Truths?*

All research participants no matter how peripheral or how central to the enterprise continuously construct and reconstruct reality for themselves via experience and interpretation. Every enactment of cultural production is both reproductive and transformative. When the researcher, especially the insider/outsider fixes an interpretation in writing, it immediately comes under challenge both from others who also have engaged in the same instances enactment of culture and from the fields and structures themselves that are newly mediated by both the experiences and the interpretations. Written reactions and interpretations are snapshots. They are at once obsolete and enduring, static and changing. The participants themselves in reflection, in

dialogue and in future activity, as well as readers who have played less-central roles in the events and activities both learn from and challenge these snapshots. (Tobin & Steinberg, 2015)

Science, a set of practices whose very name betrays hegemonic designs on the knowledge business, is but one among many ways of knowing. These many knowledge systems may be complementary, parallel, even contradictory, but each of them is a way of making sense of the phenomena we live every day. These ways of knowing often involve the use of physical and intellectual tools that mediate our experiences in the world. Science is characterized by the use of microscopes, centrifuges, test tubes and the like which are so identified with scientific practice that they often are used as symbols for the entire enterprise.

Three intellectual tools (that, interestingly, have names that are metaphors for physical tools) are filters, lenses and lights. Each of these allows us to see the world in a somewhat different way; all taken together give us an insight into some of the often-denied contingency that characterizes knowledge production in Western science. Filters allow us to simplify phenomena, to eliminate selected information from consideration so that we may concentrate on other aspects of the phenomenon. Lenses allow us to sharpen and resize areas of inquiry that are of interest to us so that we can examine them in more (or less) detail, or to make them closer or more distant as our needs dictate. Lights are externally applied and highlight shades or aspects of natural phenomena. Lights may be of different qualities (brightness, color, constancy) or they may be applied at different angles to illuminate textures and topography. These tools, each alone, or in various combinations with each other and with other intellectual tools illustrate how the same “reality” leads to different knowledge depending on the methods employed and the choices made by the researcher.

GENERALIZABILITY, FAMILY RESEMBLANCES, AND KNOWLEDGE PRODUCTION AS REPRODUCTION WITH TRANSFORMATION

Among the hegemonic, positivistic imperatives of Western science is its demand for repeatability and generalizability. Again, I think that this is more of an issue of the practitioners and even more of the acolytes than of science itself. Of course, statistical generalizability is a perfectly reasonable expectation. If cause and effect relationships are sought while, for example, exploring the effects of radiation on various aspects of DNA replication, scientists should document all experimental procedures and conditions so that their work can be confirmed or refuted, and built upon. A problem occurs, however, when this kind of thinking is applied to the investigation of social life.

This may be an artifact of poor science teaching. Even the commonly used words “teaching” and “instruction” reveal a pervasive one-way, transmission perspective in both fields. In this “banking model of education” (Freire, 1970), the learner – an aspirational member of a community of practice – is a passive vessel in these constructions. Agency is, if not forbidden, at least constrained, and put off to a time and place where the learner has been assimilated, indoctrinated, trained in the dogma, the canon, the Truth.

What can *this* tell us about *that*?

Recently, in discussing this idea of generalizability in the social sciences, the question arose, *how can you expect to make generalizations and predictions using only one person?* I bristled, then realized (not without some embarrassment) that this is a question *I* might have asked in the not-too-distant past. How *do* we do meaningful research on social life? How can we mount an objective study of social phenomena? The short answer is, we can't. However, this is as unenlightening an answer as the sample size issue is a question.

Here is an example: Informal (even unaware) social science investigation is done within the most common of social groups – the family. Raising children is almost universally done with “sample sizes” of $n < 5$...and, objectivity is not claimed, nor aspired to, nor achieved. The family “researcher” is deeply involved in every aspect of the project of understanding, learning from/with, and making choices and performing actions that benefit both individuals and the group as a whole.

But even the language used to discuss these issues is hegemonic and heavily laden with subtext and supertext that must be challenged. Social science is not necessarily done with samples, with “n”s. The participants in social science research (like the members of a family) are not representative of a larger population to which our findings can be applied. Family resemblances and the ability to use knowledge produced by this research in other settings is part of why this work is done, but much of this research focuses on difference, contradiction and complexity.

Of course, the living of family life, or any aspect of social life is hardly considered research. However, social science research often exists within the same constraints and affordances associated with the living of social life. In fact, for the research documented in this dissertation and for most phenomenological hermeneutic research, engagement in social life and research of social life are so inextricably intertwined as to be inseparable. This renders demands for and claims of (or even attempts at) objectivity untenable.

Attempts at and claims of universality in this type of research also are unsound and unproductive. Generalizability, however, is a somewhat more nuanced issue and warrants further discussion. Although the bricolage of much phenomenological, hermeneutic research may include quantitative elements and methods that may well be statistically generalizable beyond the

participants in the research to some broader population, many researchers and authors commonly dismiss the idea of generalizability in social science. Margaret Eisenhart (2009) cites numerous instances of researchers rejecting the existence of generalizability in “qualitative” research and characterizing as unwarranted and inappropriate, criticism of this research for lack of this generalizability.

Methodological dissonance

In preparation for the current research, I was challenged in the process of applying for IRB approval to explain how, given my intention to focus on a single research participant, I would be able to “assess meaningful (statistical) data based on an n of 1? How does one individual predict a societal change?” I was taken aback as it became clear to me that the question was meant to be rhetorical because the next sentence included a directive to “revise projected enrollment based upon statistical power analyses” (CUNY Graduate Center IRB, personal communication, 2017).

No longer was I merely explaining my methods to a genuinely puzzled and interested Western science-oriented colleague, I was now justifying my proposed work to a gatekeeper. This required a thoughtful response that bridged very different and, perhaps, incongruent ways of making sense of the world. It required a response that would educate and convince someone whose knowledge and belief systems reflected my own professional origins. This was a valuable exercise for me as well and reflects the importance of polysemia in research: constant challenges to one’s ontological and epistemological positions and the infusion and acceptance of the coexistence of contradictory truths. If all partners in the enterprise are acting in good faith, the work becomes deeper, more nuanced and more meaningful.

Prior to this challenge, I, like many researchers engaged in what often is referred to as qualitative research made the argument that our work was not generalizable...period (Eisenhart,

2009). Social life is complex, and each individual is unique. Transactions and relationships between and among multiple individuals increase the complexity exponentially. Therefore, the claim that any individual is representative of a larger population is likely to be both unrealistic and misleading. However, I was embarking on this project for a purpose. My story and Ashley's story were to be told and explored for a reason. My colleagues and advisors were investing in my work because it meant something to them and they were incorporating our collaborative thinking and investigation of my writing about the research into their own thinking and their own work. If not generalizability in the quantitative, statistical sense, I was certainly striving for some meaning, value and relevance to others' work as I embarked on my own. My response (part of which follows here) reflects both my efforts to educate the gatekeeper and have my research greenlighted, and my own grappling with the "generalizability" of this kind of work.

The proposed study is phenomenological and interpretive in nature and as such is not intended to produce statistically generalizable findings or to make predictions about societal change, but rather to explore and document a particular and unique case of a person seeking out and appropriating a variety of resources including apprenticeship, learning on the job, and formal educational opportunities to create an effective program of professional learning in order to build a career in artisanal cheese production. However, it is hoped that this work will provide an example that learners, teachers and policy makers may use, in combination with their experience and understanding, to inform their own decisions about educating themselves and others in this and other fields. (My response to IRB application concerns, 2017)

Statistical generalizability or application of the findings of this research to some "general population" from which the participant(s) are drawn and of which they are representative is not the goal here. Margaret Eisenhart (2009), quoting Howard Becker, points out that the research on small samples (e.g., the inclusion of only one or a few participants) is entirely consistent with claims that *theoretical generalizability* in social science research can provide a "refined understanding of a generic process" – in the case of the proposed research, apprenticeship,

learning on the job, or formal employment-related “training” – that has “wide applicability in social life” (p. 60).

The participant in this research was chosen *not* randomly, but *specifically* for differences and individuality that it was hoped would poke at, interrogate and challenge the efficacy of the very types of broad, uniform, one-size-fits-all educational experiences that have not worked for so many people. Ashley’s experiences will help to shed a light on how individuals encounter and engage with structures that help them produce the professional knowledge required of them.

Eisenhart (2009) explains:

In striving for theoretical generalization, the selection of a group or site to study is made based on the likelihood that the case will reveal something new and different, and that once this new phenomenon is theorized, additional cases will expose differences or variations that test its generalizability. The criterion for selecting cases from which one will generalize is not random or representative sampling but the extent to which the cases selected are likely to establish, refine, or refute a theory. (p. 60)

Kadriye Ercikan and Wolff-Michael Roth have asserted that, in social science research, it is often the case that “generalizability of research findings cannot be judged based on sample size” (as cited in Ercikan, 2009, p. 211). Ercikan further points out that, in the case of phenomenology (which characterizes the present study), where small samples are the norm, research may “identify universal relationships that have great degrees of generalizability,” while other research “may use very large samples but focus on overall group results and have very little generalizability for key sub-groups” (p. 211).

Kenneth Tobin (2009), grappling with the ideas of generalizability and sample size in interpretive, phenomenological research in education, argued that “designing a study with generalizability as a goal can lead to serious distortions in the focus of the research, the methods used, the outcomes, and the perceived relevance of the work to those involved in the study and the education community in general” (p. 158). He is concerned that his research always should

be conscious of participants as human beings rather than subjects or a randomly selected, representative sample of a larger population to which his research findings could be generalized.

As to sample size Tobin writes:

It was necessary for me to carefully consider the humanity of participants and my purposes for involving them in research. Among the puzzles that needed to be resolved were how many participants to include in a study, when to include them, the nature of what could be learned from research, and how to handle diversity within a data set. (p. 158)

Integrity of the research and its purposes as well as logistics are considerations when determining the number of participants and when to include them. Tobin advocates careful and deliberate selection of participants both serially and contingently. These decisions are made based on what is being learned and what new questions arise during the course of the research. Participants are chosen not randomly for purposes of assembling a representative sample, but specifically because of their differences from each other in order to explore contradictions, puzzles and new, unanticipated questions that arise.

Ultimately this interchange resulted in the continuation of this research and, perhaps, the smoothing of the path for future researchers.

CHAPTER 4

HOW WE (MIGHT) EDUCATE/LIFE ITSELF

In this chapter I explore various issues around, and various models of formal and informal education – both within and external to institutions and organizations whose purview is, at least in part, to train, educate, indoctrinate and support prospective, new and experienced members of particular communities.

This is by no means an exhaustive survey of educational practices. In fact, it is not intended to be comprehensive or complete. It is presented to help the reader (and the participants in the current research) to surround the story of the professional education and personal evolution of Ashley – the cheese professional whose experiences are the focus of this work – with meaning.

* * * * *

“I believe that education, therefore, is a process of living and not a preparation for future living” (Dewey, 1897)

“Education is not a preparation for life; education is life itself” (Dewey, 1938).

* * * * *

That Dewey revisited this idea throughout his career, constantly restating and rewording, is, I believe, an acknowledgement of the intertwinedness and inseparability of knowledge production, enactment of culture and, the myriad actions and interactions that comprise social life.

Dewey’s explanations and explications of this and related ideas were mainly concerned with how schools educate children to become full members of society, he consistently described the process of education as one in which adult members of “the race” help the child to gradually

come to share in the intellectual and moral resources which humanity has succeeded in getting together” and to become “an inheritor of the funded capital of civilization” (Dewey, 1897).

REAL-WORLD LEARNERS IN ARTIFICIAL LEARNING ENVIRONMENTS

Schools are the most obvious and ubiquitous institutions that are used to educate. Do they reflect Dewey’s belief that “education is life itself”?

Schools decontextualize learning from life and recontextualize it in a contrived environment that is, at best, a diminished simulation of the “real” world of the learner. This happens both by effect and by design. However, so often what formal education provides is much more diminished than even that – it is spare, sterile, antibiotic. In Dewey’s (1897) words, “education which does not occur through forms of life, forms that are worth living for their own sake, is always a poor substitute for the genuine reality, and tends to cramp and to deaden” (Article II; p. 7).

Kindergarten begins for most American children at the age of four or five. Many children arrive in Kindergarten with one or more years of formal preschool behind them. However, by the time children enter “the system,” they already have succeeded in teaching themselves (with little to no overt instruction) how to speak a complex human language (or two) with all of its quirks and irregularities, how to walk, and how to function in the social environments of which they are part.

Then they enter school...perhaps excited, perhaps fearful, but definitely with much experience at knowledge production in their past and their present. Schools, in an ostensible effort to prepare children for life, remove them from the complex, messy, contradictory natural and social worlds that they do and will continue to inhabit – worlds that have nurtured them and, in uncountable ways, constructed their identities – and place them in a simplified, regulated

ghost of their own experience. These environments are very much less-than what they are used to. The less the child's family and home reflects the dominant culture, the less of the familiar structures that child may easily appropriate are available to him or her.

This may be a bleak picture – perhaps overly bleak – and obviously formal schooling works for many of us, perhaps particularly for those of us in academia. Or, perhaps we have been able to achieve our goals despite our school experiences. But, I hope, by following a single learner's unconventional journey, to provide an example of learning | teaching that supports the possibility of many different ways to educate oneself and others that will address the needs of the many whom formal, institutional education leaves in need of something more, or, at the very least, something different.

Curiosity, reason, awareness and emotion may not distinguish humans from all other organisms, but they are components (pieces) that define us as a species. Our sentience and the sapient nature that provides us with our scientific epithet require more of learning than merely being taught. Respect for the humanness of a human being demands educational structures that engage the learner in mutual social encounters that occur as much as possible within the worlds we actually occupy (as opposed to pale facsimiles designed for the purpose of educating) as we make sense and as we make meaning. This is the essence of the “schooling vs. education” arguments I present throughout this dissertation. Can we make schooling (formal education) more efficacious and more respectful of human capacity by moving schooling practices from mere “preparation for life” toward authentic engagement in social activity – “life itself”?

Recent focus on “opportunity youth” – people of ages 16 – 24 who are neither in school nor working – is an acknowledgement that all people learn by being in the world. Organizations like *The Corps Network* (n.d.) and *Grads of Life* (n.d.) offer “mentoring, internship, school-to-work,”

and other strategies to address this issue as a problem of (a) wasted human resources and a developing financial burden for the United States, and (b) lack of opportunity for young people. The deficit view of this population is evidenced by the fact that they are commonly referred to as “disconnected” youth. Recognition of this group of young people and the need to find a way to both support and to utilize and nurture their “life skills” is one area where Ashley’s story can illuminate possibilities and pathways.

ALTERNATIVE APPROACHES

Of course, the efficacy of vocational education including various apprenticeship models has not gone unnoticed. There are numerous examples of government entities, institutions and school systems adopting, adapting and creating tracks, curricula, extra-curricular programs, partnerships with industry and other opportunities for students, workers and other learners. While recognition that a diversity of learning opportunities might better serve the diversity of learners, we might be wise to be wary of hegemonic, paradigm-entrenched institutions’ attempts at incorporating viable programs without corrupting them to the point of ineffectiveness in serving learners’ needs.

Among the pitfalls of institutionalizing alternative and complementary educational opportunities is that they may become sheep in wolves’ clothing. That is to say that such programs take on the appearance and use the language of viable strategies, but actually they offer learners more of the same formal education practices that are not working for so many.

EDUCATION WITHIN INSTITUTIONS

Education, institutional and otherwise, is rife with oases of cooperation, collaboration, and mutual respect fueling almost magical (and, sometimes, not merely *almost*) moments and eras. Yet too often (perhaps always) these oases are fragile and ephemeral. The very flexibility, organic-ness, and continual adaptations and shapeshifting that allows these circumstances to

emerge and flourish makes it difficult to purposefully create, launch and sustain them with confidence in their ability to persist. It often is quite difficult to even identify exactly what makes them work. Institutional efforts to construct and maintain such entities often takes control outside of these communities of practice and places it, at least in part, in the hands of administrative entities that do not understand the nature of the work, or may, in fact, be hostile to it.

Professional education structures exist as and within institutions. They assume many forms – formal education, training, apprenticeship, learning on the job, etc. – and they enjoy varying degrees of success and durability. A question that I will pose, but not resolve in these pages is, what are the elements, conditions and practices that foster the possibility of sustaining, positive, supportive educational practices that can endure, resist, or, at least, respond successfully to changes in leadership and membership, and, perhaps most important, to changes in the institutions within which they are housed?

There are myriad manifestations of apprenticeship that run the gamut from perceived paradise to virtual servitude. Various examples along this apprenticeship continuum have been described and explored by Jean Lave and Etienne Wenger (1991) and Thorsten Geiser (2014). The anthropologist Trevor Marchand’s (2008) work in this area is particularly enlightening as he recognizes “apprenticeship as both a mode of learning and a field method” (Marchand, 2010, p. 51), and in his research, he personally has participated in multiple long-term engagements in a diversity of professional communities of practice.

EXTERNAL CONTROL

One danger outlined by Geiser (2014) is what he refers to as the inhibition of enskillment of British horticultural workers as more and more landscaping and gardening activity is outsourced from public to private employers. Studies and reports by government, trade and industry

organizations have outlined “widespread loss of the family firm and master craftsmen, where traditional skills were passed down from generation to generation and from master to apprentices” (p. 131). These reports raise the alarm that regional and local peculiarities may disappear and that some skills may be lost entirely. Paths to join communities of practice and move toward central participation in those communities may become less available to novice practitioners. Fewer novices moving through the routes institutionalized within crafts and trades may result in fewer master craftspeople when trades and crafts are nationalized, standardized and controlled from outside of the community of practice. Once the education of gardeners becomes the purview of institutions and organizations outside of the profession, external considerations such as efficiency and standardization begin to dictate what and how employees are to learn their trade and how their skills are deployed.

REVIVING THE OLD WAYS

An atavistic group (or, more correctly, groups) of nascent European tradespeople known as *Wandersgellen* practice an interesting hybrid of formal schooling or professional training and a more traditional learning-by-doing model (Eddy, 2017). After required education determined by each one’s particular trade and country, these workers set out, individually or in groups, on a journey that generally lasts at least as long as their formal training plus one additional day, during which they must live solely by practicing their trade (building, carpentry, baking, gardening and many others). These neophyte workers adapt some of the trappings and rituals established by their medieval professional forebears. *Wandersgellen* do not belong to a single organization, or trade association. Each is committed to his (and increasingly, her) own particular craft or trade and, together, they form a loose community of practices of which a central understanding is that practicing one’s professional work in the world is how one best learns to do

that work. Their allegiance to this belief is apparent from the directive that the in-the-world component of their education be longer than the formal “training” component.

BRIEF EDUCATIONAL BIOGRAPHIES

Following are brief biographical sketches of the participants in the current research. They will place participants’ own educational experiences in context and offer some insight into the events described in this work.

The teacher | researcher’s story

My education, both formal and informal, in science has both fueled and been fueled by a wonder at the workings and complexity of the natural world. While the regular patterns and cycles of natural phenomena are wonderful and awe-producing, it is the oddities, singularities and dissonant phenomena that attract attention as they emerge from and disrupt the orderly landscape of the natural world. These flashpoints of interest ignite the fundamental and generative scientific tool of curiosity enticing the researcher/observer and inducing exploration and investigation. My “training” in the ways and methods of Western science suborns a type of sense-making that shoehorns the unusual and contradictory into an existing set of rules and paradigms that pass for Truth. This stands as knowledge production and serves to impose an order in the world which causes the pieces to fit together and the whole to make sense. Even though it is precisely instances of rupture of the natural order or contradiction of the current understanding that mark enormous “advances” in science, our tendency is to conform and to expect the world to conform along with us. Hegemonic academic and scientific establishments tend to squash outside-of-the-box innovation and alternative epistemologies, even though they often eventually accept and champion them – bringing these ideas into the canonical mainstream to themselves squash even newer ideas.

As I have pursued understandings about the social world, the world of people – a world that is artificially set apart from the natural world – I brought the pervasive attitudes, perspectives and self-privileging of Western science with me. Although the substance of the current research is the interrogation and meaning making from the self-education of a cheese professional, an even more significant element of this project has been ontological, epistemological and even axiological shifts in myself. The seeking of answers to particular questions, experimental design that “ensures” objectivity and that constrains and prevents the knowledge seeker from straying from those questions characterizes the *de facto* if not the ideal practice of Western science. These attitudes and approaches, nearly universal in Western science (and even more so in science education) often are carried into explorations of the social world. Surprisingly, well into the second decade of the 21st century, demands on social science research to conform to a set of standards, rules, regulations meant for pursuit of an entirely different set of truths (and Truths) is both strong and pervasive (Kincheloe & Tobin, 2009).

A phenomenological hermeneutic approach to the events, phenomena, emotions, relationships and other structures – both directly explored and mediating – addressed in the current research seek the odd and make sense of it not by bending it to conformity, but by magnifying and pursuing differences and contradiction. What Mark Zuss (2009, p. vii) identifies as “the singular, the odd, irregular, and novel aspects of the familiar” are not merely demands of phenomena to be tamed, classified and normalized, but are bold claims (and indicators) of significance, and promises of deep and engaging meanings to be unleashed and nurtured. What might seem to be a “discomfiting indeterminacy and lack of finality” through the lens of positivism, become in the hands of the hermeneut the essence of meaning making – the point of the whole enterprise. This expansive, messy view of meaning making in the world of lived

experience frees the researcher engaged in interpretive exploration of social life to follow the emergent and contingent unfolding of knowledge production where ever it leads.

The cheesemonger | researchers' story

Carefully chosen preschools followed by “good” New York City Public Schools were Ashley’s formal education – her introduction to knowledge production outside of her family. These were places peopled by educators and caretakers who, to a large extent, worked toward the realization of their goals of nurturing learners and guiding them toward independent knowledge production. All of this was mediated by the institutions and other macro structures of which they were a part. In the context of American education in the decades surrounding the turn of the second millennium, these experiences infused Ashley’s educational experiences with large doses of content-centeredness and (often hegemonic) Western-oriented instructional practices.

Full-body Knowledge Production

Ashley’s early experiences in Cheeseworld, as an apprentice affineur, were as much a revelation to her about teaching and learning as about the enticing world of cheese production. Among her earliest mentors at the very beginning of her journey in cheese – even before she was aware that it was to *be* her journey – was Brian, whom she recognized and described as “the best teacher I ever had” even though he was not a teacher in the formal sense. This was the beginning of an epiphany about teaching and learning and about how she might become a cheese professional without the oppressive dominance of traditional structures she associated with learning [a trade] – structures that had not always provided opportunities for Ashley to achieve or even pursue her goals.

Brian didn’t appear to Ashley as a teacher. He seemed not to think of himself as a teacher. His focus was cheese. His education was in microbiology and, while he had a role in shepherding

others into proficiency in the ways of cheese production, it was the cheese that was the center of his attention. However, perhaps both Brian's intuition and intention as well as his attentiveness mediated Ashley's and her fellow novices' experiences as learners in the caves.

* * * * * * * * *

Ashley talked about how Brian worked with her and her fellow apprentices in the caves:

Brian would show us how to turn, wash and replace the wheels of washed rind cheeses. He would tell us how often, and why it must be done. He would caution us about problems that may occur, illustrating these warnings with stories - sometimes horror stories - of past mishaps. Then he would watch us as we performed the same tasks that *he* did so deftly, seemingly automatically. However, when we did the same tasks or initiated the same procedures, at least at first, our own actions were awkward and tentative, our movements were burdened by the weight of responsibility (Many cheeses are expensive and require many months to be made ready for transfer to stores and consumers, but more important, they carry with them the names and reputations of the farms, makers and affineurs who have produced them.) and the pressure of being observed by both peers and masters. Throughout our early attempts at any task or process, Brian would both guide us and let us learn for ourselves. He might stand back or behind us, only intervening when disaster (contamination of product, misplacing cheeses in various stages of maturity, etc.) seemed imminent. He made us all want to be successful without really trying to. We wanted to learn what he knew, and we wanted him to know it.

Brian would teach via explicit and intentional instructions and actions, but often more effectively via (sometimes unconscious) facial expressions and movements of his body. He had worked to construct a learning environment where the interns/apprentices were eager to learn, but also eager for his acknowledgement. In this environment, they became acutely attuned to his nonverbal communication, even more so at times than in his overt instruction.

* * * * * * * * *

Teaching is not a job title, but a habitus. Parents, mentors, coaches, friends, employers – all of those who play a part in our knowledge production and the development of our abilities to do so, whether formally, ad hoc, or de facto – educate us. Each has a unique and particular set of methods and each to some degree responds to the learner, and is him- or herself a learner, or

more accurately a teacher | learner. Having noted this, we might ask, should ask what elements, what actions, what aspects of what we do as teachers seem to support learners' needs. Of course, this is not likely to be a static list, but one that changes, emerging in the moment with each combination of learner, teacher, body of knowledge, and situation (see chapter 2, p. 54).

Cheese production at all stages is a full-body enterprise. All the senses come into play in the process. Awareness, emotions and a complex network of social interactions also play roles.

In the caves as it is on the farms, smells, sights and feel are employed in assessing and working with both raw and finished materials. Taste and sound also play their roles. Discussion and instruction are largely verbally (orally and aurally) co-constructed, but non-verbal sound also is important. Beyond the “necessary” communication, attention and the senses are engaged with more tangential or parallel stimuli that accompany the cheesemaking processes: barnyard smells (which often are invoked in the descriptions of the flavors of earthy cheeses); the sounds of animals and machinery; the sometimes strong ammonia smells in the caves; the feel of the rinds and pastes of the cheeses; the sense of a not-quite-claustrophobic space in a cheese cave lined with wooden shelves stacked with a variety of sizes, colors and shapes of cheese; the feel of the corer breaking the rind of a cheese and the resistance offered by the soon to be revealed deep regions of the wheel. The feel, smell and taste of the small cylindrical “ecosystem” of milk, bacteria, fungi and abiotic components that comprise the newly exposed core. All of this is often done with others in close spatial and social proximity – also engaging the senses and emotions of all involved.

Learning in the presence of the materials, phenomena, practices and products of cheese production engages all involved in processes of knowledge production that are both embodied and transactional. The more experienced partners in this enterprise – the old timers in these

communities of practice – engage the novice learners physically, emotionally, and verbally. Their movements and professional decisions are more deft and, often less obvious than their less-experienced and initially more awkward and unsure apprentices who listen, imitate and interact with mentors and peers in their efforts to get it right – to move toward mastery or centrality.

There are degrees, awards and credentials associated with professional cheesemaking, affinage and even cheesemongering. These are earned as a result of formal schooling, competitions, and what amounts to standardized testing by both industry and educational institutions and organizations. But it is the awkward, uncomfortable, angst-ridden, joyous, triumphant, sensual and emotional experiences in the trenches – the milking barns, caves and cheese counters – in the presence of mentors and peers where mind, body and spirit become legitimate, central and essential components of Cheeseworld. This is what education (although not necessarily schooling) is – a purposeful (but not deterministic), and authentic making sense of the world in the world. Once again Dewey’s admonition that education is not preparation for life but is life itself, asserts itself. Living, working, being a social individual is all of a piece. It is not always apparent, perhaps it rarely is clear at all, to the individual, but the learners, teachers, materials and phenomena of the world interact and transform in context as they shape and reshape reality persistently, continually and in perpetuity.

Experiences in the caves and other venues where Ashley has been and continues to forge a professional education are characterized and shaped by empathy, emotional engagement, and authentic knowledge production that comprises the development of expertise that is in large part embodied and, to some degree, less-than-entirely conscious. In becoming a cheese professional in the context of a community of practice, Ashley is transforming intellectually, emotionally, socially and physically. She is becoming aware of some of these changes, but certainly not all of

them. She often is slow to recognize her own growth and expertise and, while this may impinge on her confidence, it prevents the urgency of having “so much to learn” as a motivator.

Empathy requires that participants experience the world, or at least imagine the world as the other does, and then to act as that person would. Brian worked to construct an environment conducive to the production of both cheese and cheesemakers through explicit instruction, clearly modeling actions and procedures, and being mindful and attentive to the social and emotional ambiance in the caves. Apprentices accepting the responsibility of caring for and nurturing cheeses in the caves were guided by a sense of purpose, by Brian’s words and actions, and by the powerful inclusion in the community of practice in authentic and legitimate ways.

Emotions that characterize and shape the knowledge production of learner | teachers are activated in the transactions between and among mentors and apprentices. Knowledge production is social, verbal, intellectual and embodied. Although I name these four modes or loci of knowledge production, they are inextricably intertwined and overlapping.

Although outside of the scope of this work, if we are to achieve the fullest picture of the types of learning (apprenticeship, coaching, and even formal instruction) explored here, it is natural to wonder about and important to note the work of authors who have addressed aspects or facets of, or angles on apprenticeship learning that try to understand the nature of their viability and appropriateness as ways of making sense of the world. Features of apprenticeship learning or learning at the elbow of a more (or differently) experienced partner are grounded in what Maxine Sheets-Johnstone (2000) characterizes as the apprenticeship to our own bodies in which we all engage during infancy. This is when we learn to move and “develop...understanding of the bodies and movements of others.”

The origins and foundations of adult capacities are found in this early corporeal and social knowledge production. Sheets-Johnstone asserts that adult apprenticeship to anyone in carpentry, pottery, cheesemaking or any other craft would be impossible “were we first of all unable to move ourselves knowingly and efficiently, and second, to move ourselves knowingly and efficiently in ways coincident with a master or expert craftsman” (p. 344).

INTELLIGENT MINDS AND USEFUL BODIES

Firmly embedded in the canon of common sense, both historically and in the present, is the notion of separation of the physical self on the one hand and the intellectual, social and emotional self (or selves) on the other. However, a reframing of this oppositional arrangement as a dialectic – mind | body, or even mind | body | environment – may provide a more viable way of understanding and relocating the nature and value of physical labor.

The literature on this issue is copious and stretches back to antiquity. Although it is neither reasonable nor practical to thoroughly explore these works here, it is nevertheless appropriate to briefly visit some of the key ideas and relate them to knowledge production in the world of cheese.

A meeting of the minds and the hands

W. E. B. DuBois, echoing and, perhaps, amplifying the Cartesian dichotomy between hand and brain or the useful body and the knowing mind, advocated for the liberal arts to the exclusion of what he termed “the servile arts” in education for African-American children in the first generations of the post-slavery era. His argument was made in the context of a people striving toward full equality in a society deeply grounded in white privilege and a post-civil war animosity that, even today, has not disappeared from the American landscape.

DuBois' contemporary, Booker T. Washington, advocated industrial education for formerly enslaved people to make them fit for the manual and industrial labor which almost certainly would be in the future for the vast majority in the generation or two immediately following emancipation. Washington sought to broaden the scope of the kind of employment in which many of these workers already were engaged.

Writing in retrospect, DuBois (1932) considered his differences with Washington and acknowledged the need for education of mind and body (if not actually embracing the mind | body dialectic) when he wrote, "Let us have, therefore, not colleges but schools to teach the technique of industry and to make men learn by doing" (p. 62).

Our brief look at the enslaved workers toiling and innovating in the gardens of Monticello (chapter 3) might lead one to wonder why the concept of mind and body in dialectical relationship is so recent a revelation. Perhaps Roy Dille (2010) offers one answer to this query when he makes a case that understanding knowledge or knowing requires a consideration of *not* knowing as a construct beyond merely an absence of awareness. In an examination of French officers in colonial Sudan, he argues that "nescience [i.e., lack of knowledge] regarding their surroundings and the local cultures was sometimes a case of simply 'not knowing,' but ignorance was also intentionally fostered to keep deep-seated prejudices intact" (p. S17). After the initial necessity of generating familiarity via empirical efforts, later waves of colonizers who were "book-trained before arrival" wielded ignorance to enforce and reinforce their dominance in the new status quo. Parallels to the view and treatment of enslaved Americans by their fellow free Americans are not difficult to identify.

Matthew Crawford (2009) and Mike Rose (2004) argue that much manual and craft-based work constitutes intellectual engagement of a very high order. They, not alone in rejecting

Cartesian dualism, provide detailed analyses of various types of work: waiting tables, motorcycle repair, carpentry, plumbing, etc. Trevor Marchand (2008) whose research methodology includes entering into long-term apprenticeships in, among other fields, mud structure architecture, minaret building and fine furniture manufacture, provides more insight into the “intelligent” nature of physical work and calls into question the categorization of work into academic and manual forms.

Rose argues that “[f]ield experience is essential to... [learning and] teaching” (p. 57). He illustrates the inadequacy of the standardized, contrived nature of traditional schooling with this example of knowledge production realized via engagement in the real world:

Repair work, especially on older or less expensive homes, offers important challenges for young plumbers that they won’t get doing new construction. Materials are not always standard; there are unusual structures, nooks, crannies, surprises within the wall; there is often a series of past repairs, layered one over the other, often makeshift... (p. 57)

Mind | body and cheese

The processes that comprise the production of cheese and other dairy-based products from farm to table well illustrate and support a holistic, inclusive and encompassing view of this work. It is clear that the “education of mind and body” (DuBois, 1932, p. 62) necessary for this field of knowledge production requires full engagement in the practices of the profession.

The operations of a dairy farm – arguably, particularly on many of the small farms that generate cheese and cheese precursors for artisanal food production – are labor intensive and require full and deep intellectual engagement on the part of all of the workers. Successful production and maintenance of these facilities are characterized by a complexity borne of the interrelationship of myriad biological and inorganic factors. First and foremost, deep understanding of the physical needs, life cycles, reproductive requirements and nutritional demands (as well as, on many farms, the emotional states) of cows, sheep, and goats is necessary

for even minimal success. Maintenance of fields for grazing and exercise requires intimate knowledge of the annual cycles of key plants – both those used for feed, and weeds and potentially unhealthy species – as well as an understanding of multi-year cycles necessary to maintain soil fertility and to mitigate erosion. Farm operations also require skills related to maintaining vehicles and mechanical equipment; fashioning special tools; developing systems of moving, feeding, milking and caring for the health of livestock; and keeping records related to both farming and business practices. No member of the farm community can be responsible for all of the know-how and expertise needed to successfully operate an agricultural concern (e.g., a farm, a creamery, or a food processing and packaging plant). Instead, knowledge and knowledge production are distributed among a community of practice to which each member contributes and from which each member learns continuously.

Cheese making

Cheesemakers must have an intimate knowledge of the chemistry of the milk, and of the biology of the various organisms with which they partner symbiotically to produce cheese with the desired colors, flavors and textures. For example, different species or strains of bacteria are introduced to the developing cheese at different times to control the size and number of holes in an alpine-style (Swiss) cheese or the firmness of a brie. Blue cheeses require a regime of inoculation with *Penicillium* fungi. Washed-rind cheeses must periodically be turned and washed. Cheese with mites must be brushed to control the levels of the mite population on the surfaces. Several of the cheesemakers I have met began their careers as microbiologists or biochemists. In the field – on the job – this formal education is enhanced, magnified and synergized by a mix of experience, intuition and collaboration with other professionals in the communities of practice in which they participate.

Affinage

Affineurs, whether farm-based or working in independent operations in collaboration with cheesemakers, must monitor and respond to changes in the developing cheese. They maintain carefully controlled environments (caves) where they can have the most influence on the processes. Some of the larger affinage operations that ship overseas, construct mobile caves in shipping containers to better control the processes both to maintain their own and the cheesemakers' standards and guidelines and comply with international laws and regulations.

Storage, sales and consumption

Cheesemongers sell cheese. This statement vastly underrepresents another complex, set of physical and intellectual activities and practices in the farm-to-table collaboration within Cheeseworld. Cheesemongers must purchase, store and sell a variety of products. They bridge the fields of cheese production and cheese consumption within Cheeseworld. They must understand both cheese and consumer. They are experts and educators. Their business depends on relationships between themselves and their customers. They must know the nature and attributes of a variety of cheeses – this is not simply a matter of knowing a static cheese, but rather knowing the farms, dairies and affineurs that produce the cheese; understanding how cheeses change seasonally and with each production run; and even how cheese develops from the time it enters the store to the time it is consumed. They also have to know how these cheeses might pair with food and drink. They then must know their customers, either through experience with the regulars or by questioning of and discussion with new or infrequent customers. Aside from selling cheese, the cheesemonger must know how to store and preserve cheese in the store, and provide advice on storage, cooking and use in the home.

Depending on the scope of individual operations, storage, packaging and transport of materials (e.g., from farm to cheesemaker or from cheesemaker to affineur) must be attended to in order to insure preservation of the components (e.g., curds, whey) and support of the active processes (e.g., ageing) that need to be maintained and controlled in the living “ecosystem” of a developing cheese.

Learning from others

Professionals in all stages in the process are educated both formally and organically. Farm agents, state agriculture departments, master (or at least more experienced) cheesemakers and affineurs, store owners and master cheesemongers often explicitly educate less-experienced workers as well as consumers. But experience in the world and on the job probably account for more relevant knowledge production. Relationships with mentors, learning at the elbow of the more experienced practitioners, and professional peer interactions are especially important. But the sometimes-naïve queries and concerns of the less experienced and of the lay customer also are a resource used by cheese professionals as they move toward excellence in their fields.

Mind | body | environment

All of the aspects of cheese production and consumption – experiences that take place in fields, barns, creameries, caves, cheese shops and kitchens – engage the theory, but also the physical practice of the craft. Senses, muscles, emotions, relationships, and interactions between and among participants, involve full physical and non-physical engagement that is intertwined and reflects an inseparable “interdependence of mind, body and environment” (Marchand, 2010, p. 51).

This expansive vision of education that is always occurring *in situ* between, among and within body, mind, social context and physical environment further highlights and draws into

question the efficacy of schooling and formal education in contrived educational environments designed to control and dictate within very narrow parameters *what* is learned and *how* it is learned.

The manifestations of Cheeseworld that precipitated the present study have, to a great extent, exhibited un-nameable, alchemical generative processes and attributes that allow them to form and shapeshift across, among and within institutions and that elicit a range of responses from active support, to indifference, to outright hostility. Notably, Cheeseworld overall, at least as experienced by the participants over the course of *this* research, exhibited an almost gyroscopic stability. Of course, there are notable, even glaring exceptions to this. However, the most errant and destructive events and practices seem to have occurred in areas where cheese is less central to the field in which participants operate, for example, in a large grocery store chain where budget concerns led to combining the cheese department with other “related” departments (e.g., prepared foods, charcuterie, wine) and placing non-cheese people in positions of power and decision making.

I hope that both participants and readers will find within these pages, structures that inform the support and sustainability of places and ways for others to thrive and flourish in a this and other fields.

CHAPTER 5

WHAT NOW?

No sweeping new pedagogies, professional education approaches, or other learning | teaching strategies have explicitly been presented, described or proposed here. Apprenticeship, learning at the elbow of a more experienced partner, peer to peer interactions and other types of formal and informal knowledge production have likely been with humans since before we *were* human.

What we *have* presented here is a picture, formed and evolved via recursive conversations and interpretive methods of analysis, of one learner's attempts to construct and pursue a dynamic, responsive professional education both inside and outside the usual patterns seen both in schooling and in the cheese and broader food industry. Ashley's pursuit of a career, or perhaps more accurately, a life in cheese represents a sort of bricolage that mirrors the progress of the research that I have used to explore and make sense of her story. She stumbled into membership and "legitimate peripheral participation" (Lave & Wenger, 1991) in a loosely defined community of practice – Cheeseworld – and moved toward central participation in that community. Ashley pursued and appropriated resources as necessary to attain a set of evolving goals. She took advantage, as happenstance presented, of just-in-time opportunities, and, along the way, made "mistakes" that either required repair or presented new directions and opportunities – sometimes both at once.

Ashley's bricolage approach included internships, apprenticeships, volunteer work, hanging around places where opportunities might present themselves, formal classes and workshops, and cultivation of personal relationships. However, Ashley's self-directed educational process was (and is) not entirely, or even primarily, a result of prescience, strategic calculations, and purposeful decision making at each step of the way. It included chance, providence, and

serendipity as she pursued both cheese and a fulfilling life. Supportive structures made themselves apparent as she sat in bars and restaurants, served customers at work, and talked with friends and acquaintances about her love of cheese. Ashley's passion engenders excitement and has frequently generated partnerships with others who shared devotion to cheese and related products (beer, wine, spirits, bread and other foods), or simply were drawn in by her enthusiasm. Ashley thrives as she sees her enthusiasm reflected in those around her. Her work ethic has resulted in the honor and burden of others' trust and offered/acquired responsibilities. Within Cheeseworld, this plays out as opportunities to make cheese in various facilities, to interact with makers, affineurs and mongers, to represent businesses – often venerable operations that bear family names or some other meaningful monikers that carry long and hard-earned reputations. Of course, in places (fields) where cheese is sold and consumed that are not really within the community of practice associated with Cheeseworld, other experiences are to be had. For example, in the grocery store in which Ashley worked, particularly as the cheese department, once run, stocked and cared for by cheese people, became accreted to other departments – charcuterie, prepared foods, bakery, etc. – she found herself and her abilities underappreciated and underutilized. In such situations, it was/is not uncommon to be passed over in favor of less competent, but more socially connected coworkers. It also, at least for Ashley, became frustrating to see product stored, cut, displayed and sold with less than the care and seriousness it deserves.

ON RACE AND GENDER AND OLD-BOY NETWORKS

Race, gender, class and other social group and identity issues are largely and notably unaddressed in the present research. These matters and their implications are so embedded in

social life that it is unreasonable to ignore their mediation of many of Ashley's professional and personal experiences along the journey documented and explored here.

We briefly touched these issues in discussing Ashley's acceptance and moves toward central participation in Cheeseworld in chapter 2. While this is an area worth interrogating and essential for a more complete understanding of the story we are pursuing, these identity issues have not loomed large in most of the fields we have had the opportunity to observe and explore. The few times that Ashley has conspicuously bumped up against obstacles appear to involve tacit, even unconscious application of both White and male privilege. These have largely occurred among non-cheese people.

Trouble in paradise: three illustrative vignettes

Throughout this narrative, the positive aspects of Ashley's construction/pursuit of a professional education have been highlighted. It is important to explore some of the less-than-positive forces (both endogenous and exogenous to Cheeseworld) and to the very particular circumstances of her story.

Vignette one: Going solo

For six months, Ashley had been conducting monthly cheese classes for the high-end grocery shop where she worked. These classes had been planned and usually conducted with Tyler, her supervisor and mentor. Occasionally, another cheesemonger would work with her. The attendees at these classes, although a changing group had a core of regulars who had over the time of these classes, developed a community that included both attendees and instructors. Many members of this core group had specialized knowledge of cheese or other related areas (wine, beer, spirits, bread, etc.). In addition to the regular and transient attendees, local and visiting cheesemakers and dairy farmers would attend and, sometimes, help to present.

In preparation for Tyler moving up in the hierarchy, the store had hired a new manager, Mark, from outside. Part of his duties would be to conduct the monthly cheese classes, most likely, it was stated, with Ashley. For his first class, it was decided that Mark would work side-by-side with Tyler. Ashley attended this session as a supportive participant, although she took part in the preparations and, during the event, interacted with the regular crowd who looked to her as an expert.

The next month, Ashley and Mark were to conduct the session together. The usual crowd, mostly regulars with a few friends and some new participants gathered, greeted, caught up with each other and settled in for another evening within a loosely defined periodically materializing community – a kind of thriving, but ultimately delicate microfield – that had established itself with monthly coalescences around not only cheese (and lots of wine), but mutual respect, synergy, shared and positive emotions, and both shared and complementary goals around one of the most fundamental common human experiences: food – acquiring, producing, consuming and sharing. This microfield – unbounded as all fields are, exerts itself with potency diminishing with distance, and it is impinged upon to varying degrees by countless other fields.

Mark was introduced by his and Ashley's mutual mentor, Tyler, who had assisted in the planning, but otherwise left Mark and Ashley to conduct the class on their own.

As usual, the two cheesemongers took their places – side-by-side, hands locked behind backs in an at-ease position – behind the demonstration table where the night's provisions were carefully laid out and, after several attempts, quelled the conversations among the participants who sat at their places – each adorned with water and wine glasses, palate cleansers, a paper guide to the cheeses and dairies to be explored, and a laminated mat that both served as a plate and mapped out the cheese journey that they were about to take.

Mark broke the anticipatory silence: “Welcome to my first solo class.” A physical jolt passed among some members of the group both at the obvious inaccuracy of the statement and at the social violence perpetrated by this newcomer.

Throughout the evening, several members of the community, particularly a regular participant named Peter – adding to his usual role of playful disrupter, measures of both student and protective father – actively worked to repair (or counter) this breach. “Ashley, what do you think about that?” “How is this different from the natural rind process that you showed us last time?”

Peter, a wine sensei on the outside, joyfully took on the role of “little grasshopper” in Cheeseworld.

Several times during the session, Ashley’s expertise about cheese and about the group asserted itself. She stepped in at times when Mark was at a loss or when he did not appear to have the appropriate depth of knowledge and understanding of cheese in general and *these* cheeses in particular. In her role of supportive colleague, she managed to appear to supplement rather than take over, always attending to the success of the experience for participants and instructors alike.

After the session Mark, quietly and not in the presence of others said to Ashley, you really know about cheese, I couldn’t have done this without you. He never made any mention of this to anyone else. His choice about when and where to acknowledge Ashley’s contribution calls into question both the awareness and the motivation behind his self-introduction, hints at a worldview, and foreshadows the professional behavior he would show for the duration of his relationship with Ashley and, likely, beyond.

These behaviors might be ascribed to one individual's issues with gender, race or some other factor. However, the tacit acceptance of the behaviors reveals a more widespread, systemic mediation of professional and personal relationships by factors other than hard work and competence.

Over the next few weeks, several of the participants mentioned the incident to Ashley during visits to the store often in quiet pull-aside discussions away from the cheese counter.

Over the next year, Ashley would note: "He doesn't know anything." "He's not even interested in cheese; He's a beer person." "He's ruining our reputation; why can't the store manager see that?"

Nonetheless, Mark continued as manager although episode after episode revealed that his abilities might be more appropriately deployed in other areas. Friction with both employees and customers was the norm. Ashley was determined to carve out a place for herself in Cheeseworld and she was confident that she would...but not here. She had outgrown the place that had nurtured her. It was time to move on.

Only after a year of ontology-challenging experiences did Ashley begin to see this as part of a pattern rather than as a singularity – part of an unending series of "isolated" incidents intruding into her utopian vision of Cheeseworld as somehow apart and exempt from the ways of the broader world in which she lived.

Vignette two: Next time

Part of the role of a manager/supervisor is the education of the workers in her or his charge. At the grocery store at which Ashley was employed, among the things that she needed to know (and was promised that she would learn) were the procedures around inventory monitoring and the role of the cheese department buyer. Although Ashley consistently showed her readiness to do

anything and everything having to do with cheeses (and, in fact, related departments), and explicitly indicated that she was available for these tasks, very little of this promised training was made available to her. Of her own volition and with the encouragement of upper management and even regional employees of the chain, Ashley consistently applied for advancement as positions opened – department manager, cheese buyer – even positions that would require her to relocate to other stores in the chain. Each time, decision makers who had previously recognized and praised Ashley’s work and her work ethic gathered for the official interview for the position. While the interviews invariably went well and usually were excellent, Ashley’s advancement somehow, and without explanation, was derailed at the last minute. Those hired sometimes came from outside the company or from another store in the chain, and sometimes turned out to be less-experienced and less-competent colleagues. These middle-management level employees often were afforded a large degree of autonomy by upper-level management, which could sometimes present a further obstacle to Ashley’s advancement.

Ashley’s perception, often confirmed in private by colleagues, co-workers and even managers, was that factors other than her competence, drive, trustworthiness and obvious dedication to the product and the store were at play in the decision-making process. Advancement toward centrality in Cheeseworld was not reflected in the progress of her career. Ultimately, her dissatisfaction with this state of affairs afforded her the opportunity to make changes that she might otherwise not have pursued.

“I’ve gotten everything I can out of this job; it is time to move on.”

It would be many months before her economic condition, the logistics of her personal life and the courage to take the leap would allow her to act on this impetus.

Higher ups, even outwardly supportive ones, tend to give department supervisors a large degree of autonomy to make decisions about day-to-day operations. These mid-level managers work in ways that they see fit based on their experience and on their on-the-ground experiences in their departments. This allows each department to be responsive to its customers, its staff and to the ebb and flow of store activity. However, it can and sometimes does result in unfair or unprofessional practices – de facto or deliberate.

Vignette three: Under the radar

Getting experience and being part of the broader cheese community was sometimes a challenge. When Ashley was offered opportunities to collaborate with some of the cheese suppliers and corporate consumers that did business with her employer, she was told that this activity would constitute an unacceptable conflict of interest. This was puzzling as she saw and heard about her colleagues and supervisors taking advantage of such opportunities.

“There is so much to learn and some of the best people in cheese are asking me to work with them.”

Ashley consulted her moral compass and decided that she could not pass up all of the opportunities that were being presented to her. It was clear to her that these professionals were reaching out to her not to coopt her minimal power as an access point for favorable treatment by her employer, but because they recognized her enthusiasm and her love of the work that they did.

She chose to volunteer, offer her services for free, and otherwise explore ways to educate herself by placing herself in the presence of *ad hoc* mentors. Cheesemaking, affinage, tasting sessions, attendance at festivals and farmers markets were among the experiences that Ashley took part in. Not accepting compensation (other than access to lots of cheese) was Ashley’s way of minimizing any perception of conflicted, unfair or unprofessional conduct.

Ashley didn't talk about her extracurricular professional activities, but they were not, by any means, clandestine. Thus, she was often in a position where she had to jeopardize her employment in order to learn and move toward centrality in Cheeseworld. Although her not-completely stealthy self-education activities were quietly encouraged by some, the very functions of an organization that should have been nurturing its own employees – at least those members of the team that wished to make a career in their industry and in this organization – had to be taken on, with some degree of personal risk, by the most vulnerable and powerless member of the team. This bold determination reveals a powerful internal drive that, at times, has put Ashley out on a limb, but also has brought her much of the success and opportunity she has had in Cheeseworld.

...and a new set of challenges

Now in Europe, Ashley sometimes struggles to make sense of cultural differences. As an outsider, she must confront a labyrinth of legal requirements and transactions laden with cultural dissonance that she cannot always navigate so easily. The isolation of being foreign and only provisionally documented, and uncertainty about her future (and her present) often exacerbate the consequences of these encounters with others. We reserve this line of inquiry – race, gender, language, nationality and otherness – for future research projects.

ALL ROADS LEAD TO ROMANO

Most Cheeseworlders I have spoken to do not seem to have made a single, generative, conscious decision to enter a community of practice or to seek a credential that would provide entrée into the profession. Their stories and their paths are many and varied, and more often reminiscent of the meanders encountered in an ancient river valley than the straight-to-the-horizon interstates of the American West. There are commonalities of course – interest in (often described as a love of)

cheese unites these practitioners who come from all different directions from all different kinds of places – biochemists, farmers, foodies, travel the roads and backroads intersecting each other’s routes, travelling together at times, diverging, and reconnecting. Their routes are mediated by each other’s experiences. New travelers join the journey. Casual visitors come and go.

**A PATH TO A BRIGHT HORIZON PAVED WITH GOOD INTENTIONS...
...AND SOME NOT-SO-GOOD INTENTIONS**

This research is a snapshot of right now. It is enriched and given meaning by history and interpretation and it will continue, transformed and transforming, from here on. What you are reading contains no universal prescription. It is a particular and unique story that we hope will resonate in many quarters and with many people. We hope it will inform and support decision makers – learners, teachers, administrators, policy makers and more.

The modern economy may see value in Ashley’s experience. It is a bricolage approach, incorporating non-traditional education practices. Formal public education institutions (as well as charter schools, parochial and private schools at all levels) may, in providing alternative career paths for their students, be tempted (as they have tended to do in the past) toward standardization of curriculum, testing, and educational experiences providing a one-size-fits-all “option” that will once again devalue and even stigmatize difference in the name of expediency, budgetary considerations and credentialing concerns.

Standards, for-profit “colleges,” technical and vocational schools, secondary and post-secondary schools, university-industry partnerships, and government programs all have the capacity to use this story to structure opportunities for all kinds of learners. History, however,

has shown that each of these institutions/entities can easily misunderstand and, therefore, misserve those in need (Cottam, 2017).

BETWEEN TWO WORLDS

Ashley's is a story of successfully navigating social, cultural and professional fields while trailblazing in uncharted territory, but she functions within a world firmly fixed in the status quo. The baseline – the background – is a constant push of bottom lines and the way things are. She may recognize what she has accomplished and her own happiness, but pressure from television, newspapers, friends and family – “When are you going to get a real job.” “So you are finally getting your degree; what are you going to do now?” “Everyone else already is working at something.” And, from Ashley, “Nobody understands what this is like.” “I’m tired of being poor.”

Every decision opens new pathways, even as it closes off others. Some of those others are conventional and safe, making them attractive. As Ashley leaves them behind, she is uneasy about her future. This uneasiness is fueled by others around her who have ideas about what she should do. That these people may not be where they themselves want to be or understand who she is and what will make her happy does mitigate their reservations and their negativity. Ashley's fears and insecurities magnify the doubts and conventional thinking of others. Rampant, hegemonic crypto-positivism, both internal and external, temper Ashley's decisions and her own assessment of where she is and how she got there. This likely will be the experience of many people who choose such a route to a profession.

Although Ashley has been encouraged to take loans to aid her in the completion of college and to pursue more lucrative employment outside of Cheeseworld, she has resisted. As a result, Ashley has now completed her undergraduate degree debt-free. Amid trepidation about her

future, self-doubt and mixed messages she encounters in abundance, Ashley has managed to forge a professional education for herself and continues to do so. She truly is making the path by walking. It is not a straight path, it is not always clear where it will lead. Ashley appropriates resources as she needs them and as they become available to address a loosely-defined, non-static set of goals. Along the way, she categorizes accomplishments, both large and small, as successes. Some of these successes, she recognizes as goals, often identified *a posteriori*, achieved. She also does not reject formal education structures. Ashley aspires in the near future, to achieve the unfortunately named American Cheese Association's Certified Cheese Professional (CCP) certification. She will continue to attend and compete in the annual Cheese Monger Invitational (CMI) – not necessarily to win, but as an important component of her professional education.

AN AMERICAN CHEESEMONGER IN PARIS

Ashley has spent the past year cheese making and cheesemongering all across Europe. She is, in her words, “learning from everyone.” But she also is offering her own experience and expertise as she bridges various fields within Cheeseworld on two continents.

Ashley is not unique – not in any sense beyond the fact that we all are unique. She is by no means the first American to travel to the European centers of Cheeseworld. However, Ashley is unusual – an anomaly. She was forged as a professional in the fires (or, at least, the climate-controlled caves) of American affinage and cheese making. In the United States, much of the recent and current efforts of cheese making happens in small creameries, retail operations and affinage facilities. While these operations harken to tradition, they are the homes of innovation as well. The newness of American artisanal cheese production and the penchant for Americans to reject the strictures of tradition – especially externally imposed tradition – often frees American

cheese producers from the shackles of *the way things always have been done* – a situation which is attenuated somewhat by the ecology of the organisms and natural processes that define an edible product. Ashley’s early Cheeseworld experiences in New York City and eastern North Carolina mesh surprisingly well with her experiences working among cheesemongers in London, making Cheddar in Devon, England, working and living alongside mongers and affineurs in Paris and the Loire Valley in France, visiting the open-air markets in Brugge, helping to produce Manchego in la Mancha, Spain and even her visits to the nascent and pioneering cheese operations in Puerto Rico. Many of these diverse experiences come into focus as she discusses her experiences with food writers – journalists, bloggers and others, and while attending and participating in international conferences and competitions in New York City, Paris and Tuscany. It is at these events that the tangled web of interconnectedness shows itself.

Cheeseworld is broad and large, but in many ways, it is like a small town where everyone becomes aware of everyone else’s exploits. Ashley is excited when she reconnects with colleagues and friends both in large cities and small out-of-the-way communities and her amazement when others know “through the grapevine” what she has been up to has not yet diminished. This ameliorates the sometimes lonely and isolating life away from home and on the move.

Some of the eclectic bunch of American cheese luminaries – the *lactorati* – came from the world of food, others from microbiology. Sister Noella, “the Cheese Nun” is a microbiologist who used her Fulbright grant to study the ways of European cheese makers and use their techniques to inform cheese production in her convent in Connecticut (Bittermann, 2006). One of Ashley’s first mentors in Cheeseworld, Brian Ralph, was a microbiologist who used his skills to begin a program of affinage followed shortly by the addition of education and apprenticeship

activities at Murray's Cheese, an iconic and influential New York City fromagerie (Gordinier, 2011). Ann Saxelby – who started, like Ashley, as an apprentice in the caves at Murray's – inspired by her experiences with local cheeses in Italy (Halweil, 2012), returned to the United States to become a fromager known for connecting artisanal cheese makers with cheese connoisseurs in New York. Adam Moskowitz, New York based cheese importer and distributor, and owner of Larkin Cold Storage in Long Island City, has made it his mission to (a) connect European and American cheese professionals, (b) spotlight and promote American cheesemakers and their practices, and (c) elevate American cheese making to standards and levels of respect homologous to those long held in Europe (Howard, 2016).

Ashley lives in both of these worlds – European adherence to tradition and American tendencies toward innovation. The homage she openly pays to both paths has been a large part of what makes top-level practitioners at each end of this spectrum (as well as at all points along the way) pay attention to her. Ashley is deferential but not obsequious. Experts, quickly become aware of her admiration for and familiarity with their work. Her responses to tasting their products; her incessant questions about their processes; her ubiquitous notebook which contains an unusual mix of contact information, diagrams, notes on and comparisons of techniques and descriptions of individual cheeses that read like poetry; her work ethic; and her eagerness to don the production facility regalia – white coat, rubber boots, and, of course hairnet – all speak to Ashley's genuine reverence for her cheese elders and her honesty in bringing her own experiences to the table and sometimes challenging her *ad hoc* mentors.

At this point, we are left with many questions. How can decision makers – learners, teachers, policy makers, voters – be helped and persuaded to support, or at least accept, the provision of alternative, complementary paths to success and satisfaction? How can learning experiences that

are individual, unmonitored, unmeasured and un-standardized be legitimized to the point that more of us can follow in-the-moment unfolding pathways to and throughout our professional, avocational and personal futures?

To summarize, our purposes in the study are manifold, and, like Ashley's professional journey, dynamic and partly undefined. But here are two major motivators:

- To document and tease meaning from the part of Ashley's story captured in these pages. Ashley's story is a remarkable account of someone's efforts to make a life. The story includes instances of bold, brave steps in the face of powerful forces of inertia, gatekeeping, and oppressive self-doubt. It contains tales of weathering pressures both external and internal, and, at times, succumbing to them. The story depicts achievements and setbacks that are, on occasion, indistinguishable from each other. Ultimately, the tale is of one person choosing to endure "the slings and arrows of outrageous fortune...take arms against a sea of troubles, and by opposing, end them" – not in suicide, not in murder, but in a tentative success fed by ongoing action.

We will persist in documenting and interrogating her story as it continues to emerge and evolve.

- To provide learners, educators, policy makers and the public with one example – unique but with, we believe, many resonant features – of a way toward professional competence through engagement in the activities and pursuit of the art one's chosen profession. This includes the development of a facility with the tenets, norms, and codes of the profession. Of course, the idea is not to buy into and build upon meaningless or counterproductive dogma and tradition, but to question and change things as an insider, a full central member of a community of practice. We hope that this example adds to the constellation

of individual stories that will aid all stakeholders in expanding their visions, opening their minds/hearts to difference, and accepting, if not embracing change. Ultimately it is such transformation that will open doors to more and more of us, broadening, deepening, diversifying and enriching professional practice and public understanding.

EPILOGUE

We joined Ashley's story already in progress and, as promised, we now leave it still in progress. We close with an update – a look at where Ashley's journey has taken her and a note about both of our plans for the future.

CAPITAL AND CONFIDENCE

With only rudimentary French language skills and a one-way ticket, Ashley boarded a plane for Paris and for the heart of Cheeseworld. Convinced that she had to be lucky and hoping that the European lactorati would “like” her, it would take time for her to begin to recognize and acknowledge her level of expertise, her intellectual and embodied cheese knowledge, and her increasing centrality in Cheeseworld. The symbolic, cultural and, increasingly, social capital that she had been and continues accruing were apparent to her fellow professionals in ways that they hadn't yet revealed explicitly enough to register with her. Offers of employment and collaboration, and public acknowledgement of her value as a cheese professional both in print and via word of mouth would come soon and often. Although acknowledgements continue to materialize, Ashley has not entirely established herself *in her own estimation* as a competent, talented cheese professional. She receives each recognition, each accolade, major or vanishingly minor with joy, gratefulness, exhilaration and the ever-present sense that these hard-earned acknowledgements are, to a large degree, luck or even somewhat undeserved largesse.

Each meeting with a fromager, an affineur, or a cheese aficionado would generate positive emotions that resonated with events that had characterized many of Ashley's experiences in cheese from the beginning. This encouraged her to take risks, which often resulted in further acceptance and opportunities. Her passion and determination were reflected, for her fellow cheese professionals, in her bold actions:

You mean you came to France on a one-way ticket?

You have already competed in the Cheesemonger Invitational?

You worked at Murray's Cheese?

You know Rodolphe?

Ashley traveled from France to Italy and Spain where her verbal communication would be even more harshly tested. While interviewing through an interpreter with a Spanish cheesemaker from a revered, 400-year old, family business for work at a worldwide cheese festival in Italy, she was asked, "Do you speak Spanish or Italian?" Her reply, "I know a little Spanish and no Italian, but I do speak cheese" was the last thing the cheesemaker needed to hear before hiring her. Months later when the Spanish cheesemaker and his colleagues visited Paris for an international cheese conference, Ashley found herself able to serve as a translator for them and had the opportunity to introduce them to others in her own professional circles.

SOCIAL MEDIA

Ashley has been posting regular Instagram cheese reviews - a picture and short description of cheeses she is discovering. Having read and enjoyed several of these little gems, I asked her, "Are you writing those descriptions entirely, or are you quoting from the descriptions in the stores"?

She replied, "This makes me really angry. I don't mind when my boss, who doesn't know anything and who doesn't recognize how good I am, thinks that I can't do this, but when people in my inner circle think I can't ... "

"I'm sorry," I replied, "the descriptions were just so poetic." She cut me off.

"This is what I do, and this is how I write. I don't want an apology; I just want people to stop underestimating me. Besides, they don't even write descriptions on the cards at the fromageries here. They only write the name of the cheese, the region it is from, the fromager and the price."

Ashley brought her habit (learned in cheese shops and cheese counters in the US) of encapsulating the essence of the cheese in a brief written description and began to re-deploy her cultural capital as she travelled through Europe. American cheese culture is largely derivative and emulative of European (particularly French) practices. Ashley's enactment of her own American cheesemongering habits in Europe even as she learns the more traditional ways practiced there reflects some of the recursive knowledge generation that characterizes her apprenticeships and her co-researching activities with me as we document her work.

As one of the people who is working at understanding Ashley's professional activity, I still found myself underestimating her abilities. Her writing and her use of language is often interesting because of some quirkiness in constructing sentences as well as her tendency to create new words. Her brief cheese descriptions stand apart in their poetry, reverence and personal connections.

Following is a selection of Ashley's Instagram posts:

[July 26, 2017]. Thanks to #laurentdubois for the delicious cheese tonight. Vacherin Fribourgeois Rustic, 24 month Mimolette, and Tomme Chever Cabrioulet. Thanks to @Christophefromager for helping me pick these out. (2017, July 6 Instagram post , @thecheesemaven. Retrieved from <https://www.instagram.com/p/BXBOOFPBM4D>)

[August 19, 2017]. Galoche au Thym is certainly a new favorite of mine, especially because I can't get raw milk sheep cheese like this in the United States. From Touraine, this perfect little punch contains sourdough, gamy and clove flavors. A surprising finish of butterscotch makes this delectable. This cheese is made in tiny batches by an amazing cheesemaker and sold exclusively through Master Fromager Laurent DuBois. (2017,

August 19, Instagram post, @thecheesemaven. Retrieved from <https://www.instagram.com/p/BX-pTBnhqUX>)

[2017, August 21]. Chevre du Pilat is a wonderful little raw goat milk cheese from Loire, France. This cheese is impressive because it showcases affinage techniques that I've never seen in the U.S. and [I] am eager to practice. The affineurs have aged this cheese in a way that makes the rind tough but the paste supple. The ageing has created a cheese with strong barnyardy flavors as well as notes of oak, morels, and asparagus. Ready to share this impressive plate [referring to accompanying photograph]! (2017, August 21. Instagram post. @thecheesemaven. Retrieved from <https://www.instagram.com/p/BYDon3Khr27>)

[October 14, 2017]. Can't wait to sink my teeth into this. Alp Blossom is an alpine style cheese that makes me feel like I'm biting into the rarest steak with the most vivid Bearnaise sauce. A brothy bomb of bliss that will leave your tongue blazing in desire for more. Living proof that sometimes beings are equally beautiful on the inside as they are on the outside. (2017-October 14. Instagram post. @thecheesemaven. Retrieved from <https://www.instagram.com/p/BaO7Vbbh2vQ>)

Ashley followed this post with the comment "Shoutout to @AdamJayMoskowitz for introducing me to this cheese."

[October 12, 2017]. Cabrales is a blue cheese that is made in the Asturias region of Spain. Made with raw cow, goat and sheep milk, it is crumbly and delicate. Flavors of salami, plums, and crisp apples mesh well with strong notes of peppercorns and sweet cream. It is an incredible cheese that has made me reconsider my old standby Roquefort. (2017, October 12. Instagram post @thecheesemaven. Retrieved from <https://www.instagram.com/p/BaJ0tqNBLNI>)

This post drew a response from Culture Magazine (the premier journal of American cheese):

"What a description"!

[April 15, 2018]. Chèvre Frais au Wasabi is a cool little combo that continues this fromagerie's [Salon du Fromage HISADA] marriage of French and Japanese hybrids. The creaminess of the goat milk pairs nicely with the wasabi, showcasing clean, nutty and spicy

flavors. A bit tart and a bit sweet, it brings a nice gentle heat. This mini cheese macaroon tastes great paired with Riesling, sake or anything bubbly. (2018, April 15. Instagram post. @thecheesemaven. Retrieved from <https://www.instagram.com/p/BhmUiDXFNV0>)

In these posts (each profusely embellished with hashtags pointing towards and alerting various makers and sellers of cheese), we see Ashley simultaneously reflecting, educating, acknowledging and networking - not in turns, but all of a piece - in a genuine and sincere way. She is establishing and evolving her identity in Cheeseworld for her fellow professionals, the public and herself.

THE ROAD AHEAD

Although our focus has largely been on Ashley and her work, this undertaking has been a transformational experience for both of us. For Ashley, both her professional growth and the research that interrogates and makes sense of it have changed and continue to mediate the way she perceives and presents herself. For myself, the research has allowed me to look back on a career of educating science learners and educators of all sorts. I have been able to attach meaning to what I have accomplished and make sense of how I came to be who I am as an educator. The research (including all the ancillary activity associated with being a doctoral student) also has fostered the growth and metamorphosis of my scholarship. I have been a science educator for over thirty years and engaged in educational research for more than a decade. I now identify myself primarily as an educator | researcher.

Investigating Ashley's education and evolution as a professional in Cheeseworld was an unlikely and unanticipatable direction for my work to follow. It has provided a window and, in fact, a door to new knowledge systems for me and has taken me into places, in part, intellectually, and certainly physically, where I have a firm, often self-imposed outsider status.

I am an assiduously dairy-averse, mayonnaise avoider. This was a manageable issue while among the cheese professionals and in the cheese making and selling venues here in the United States. However, following Ashley and her story to France placed me in a minefield of inedible ingredients that others identify as food. In a culture that celebrates food and finds pickiness both odd and somewhat impolite, I learned to be careful to operate in ways that prevent me from having to turn down offerings. These experiences helped to make me more attuned to the issues around difference that I explore in this text and in most of my educational work.

Ashley and I, both together and separately, continue to explore her journey in Cheeseworld and will continue share it in writing and via other media.

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