Dissolving the Walls
An Inquiry into Nomadic Agile Learning

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Attestation of Authorship

I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person (except where explicitly defined in the acknowledgements), nor material which to a substantial extent has been submitted for the award of any other degree or diploma of a university or other institution of higher learning.

Matthew Stevens

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Abstract

Dissolving the Walls is an inquiry into nomadic agile forms of learning beyond the constraints of educational institutions and qualifications. It starts with the tensions I experienced in my own teaching practice when applying an agile learning approach within a graduate diploma of creative technologies. The agile approach—involving individualized curricula, introducing and connecting learners directly to the *domain of practice*, and action-based learning approaches—stood in tension with dominant models of prescribed curricula and defined learning outcomes.

Underneath this tension is a core contradiction between different worldviews and epistemological beliefs. In order to establish a suitable epistemological frame for the inquiry, the thesis begins with a philosophical discussion of the dichotomy between subjective *knowing* and objective *knowledge*. I turn firstly to Deweyan pragmatism—a naturalistic *theory of knowing*—that is able to dissolve traditional mind-world dualism through its holistic notion of *transactional* experience. This is followed by a comparative discussion of other similar action-orientated perspectives. These include *enactivism* and *activity theory* which, taken together with pragmatism, are able to contribute to a richer *pragmatist-enactivist onto-epistemology* of situated knowing.

I then return to the practical pedagogical problem of the learning situations themselves and how these might be reconceived from a pragmatist-enactivist perspective. Generally following a Deweyan process of inquiry and using a mixed toolkit of approaches, I begin with a tentative proposition for a nomadic agile learning approach—beyond the constraints of institutions and qualifications. I then set out to collect the perspectives from the main participants in the wider learning activities through a series of semi-structured interviews. Participants included former students, teaching colleagues and employers. The interviews revealed differences in the epistemological beliefs and pedagogical expectations between participant groups and between individuals within the groups. Despite these differences, I found that there is common ground—in relation to *what* needs to be learned and *how* it is learned—that can form the basis for new shared understandings and participation in an integrated *learning-practice* approach.

What emerges is not a learning *model* that can be applied generally to all situations. Rather, particular learning-practice situations are dynamically co-constituted by the participating learners, teachers, practitioners and workplaces. Traditional boundaries between learning and work activities are dissolved to form a continuum of potential learning situations, within the wider domain of practice. As practice situations are always sociocultural situations, it is not only the individual learner-practitioners who learn—the whole situation itself also learns. This has particular significance for learning for professional practice, especially in creative technologies domains. Rather than privileging workplaces as stable practice situations—for which learners first need to acquire *work-ready* skills—they are better understood as continuously unfolding *learning-practice* situations that emerge from the dynamical transactions of the participants. The implication for learning courses is that rather than workplaces being passive beneficiaries of learning that takes place in separate educational contexts, we need to dissolve the walls to create an integrated participatory approach in which learners, institutions, teachers, professional practitioners and workplaces all jointly contribute and learn together.

Introduction

Dissolving the Walls is a pragmatist inquiry that explores nomadic agile forms of learning beyond the constraints of educational institutions and qualifications. It investigates how the boundaries between traditional learning and work activities might be dissolved within the wider *domain of practice* to form a continuum of practice-learning situations. Situated specifically within the *interactive design* and *creative technologies* domains, it also contributes more generally to the fields of *design education*, *vocational education* and *philosophy of education.*

Rather than taking a traditional academic research approach, *Dissolving the Walls* takes a solution-led *design inquiry* approach (Cross, 2006), in which problematic situations are explored through the development of speculative solutions. Following a general pattern of a Deweyan pragmatist inquiry, the inquiry is grounded in my own lived experience and reflective practice as a teacher, learner and practitioner. Specifically, it begins with the problematic situation that I experienced when applying an *agile learning approach* (Stevens, 2013) within a graduate diploma of creative technologies between 2014 and 2016.

I originally developed a proposal for an agile teaching and learning approach—within creative technologies domains—as part of an Honours degree in 2013 (*see Appendix A*). It was a response to a specific set of problems that my colleagues and I experienced teaching on a diploma course in web design and development. Firstly, we found that it was very hard to keep the curriculum, and our own skills and knowledge, up to date when the domain was so rapidly changing and emerging. Secondly, the wide variance in students' prior skills and knowledge, motivations, aptitudes and attitudes made the teaching of a one-size-fits-all curriculum, where all students all move through the course at the same time, difficult. Thirdly, the proliferation of open online resources meant that students were not restricted to in-class tutorials and workshops but could potentially learn anywhere, anytime and at their own pace. However, the sheer volume of online resources made them difficult to navigate and evaluate—especially for novice learners. Fourthly, traditional classroom delivery methods—such as lectures, but also worked examples, were problematic. This led to questioning not only the viability and necessity of having a prescribed one-

size-fits all curriculum, but also where exactly current domain knowledge resides, and how learners actually learn within practical creative technologies domains.

In response to this problematic situation—and influenced by constructivism, enactivism, rhizomatic learning (Cormier, 2008), learning by wholes (Perkins, 2009) , self-organising learning environments (Mitra, 2012) and agile software development—I proposed the agile approach as a flexible, holistic approach that integrated learners, domain practitioners, practical real-world projects and open online resources. Specifically, it advocated flexible individualized curricula, emergent learning outcomes and responsive pedagogical approaches. Underpinned by a *dynamic constructivist* epistemology, I placed learners at the centre of their own individual learning networks—dynamically constructing their knowledge through their interactions with online resources, hands-on projects and domain practitioners (including the teacher and other learners). Rather than residing within the expert teacher or the curriculum, current domain knowledge and skills were seen as dynamically emerging from the interactions between practitioners, and their practices, within the broader domain of practice. The domain of practice extended the concept of *community of practice* (Lave & Wenger, 1991) to include all domain practitioners and their practices—including teachers, learners, workplaces and resources. The role of the teacher in the agile approach was not to deliver the curriculum, but rather to introduce and connect learners to the domain of practice and guide them through it. A full account of the original agile learning proposal is provided as Appendix A.

However, when applying the agile approach in practice, I experienced tensions with the dominant existing models of prescribed curricula, defined learning outcomes and assessment—embedded within the cultures, practices and policies of educational institutions and qualification frameworks. Beneath these tensions there were underlying contradictions between different epistemological beliefs and pedagogical expectations. It is these two issues—the epistemological and the pedagogical—that *Dissolving the Walls* seeks to resolve. As such, the inquiry unfolds in two parts. *Part One* is an epistemological inquiry into what it means to *know* and *learn*. After establishing an epistemological framing, I then return in *Part Two* to the problem of applying agile learning approaches in practice. Although I make a distinction here between the underlying epistemological and the practical pedagogical problematics, they should not be thought of as separate or distinct. Rather, they form an integrated whole, with the onto-epistemology that emerges in *Part One* not only informing the

pedagogical practice but also being informed by it. Following Dewey (1938a), "the introduction of a new order of conceptions" is essential for developing "new modes of practice" (p. 5).
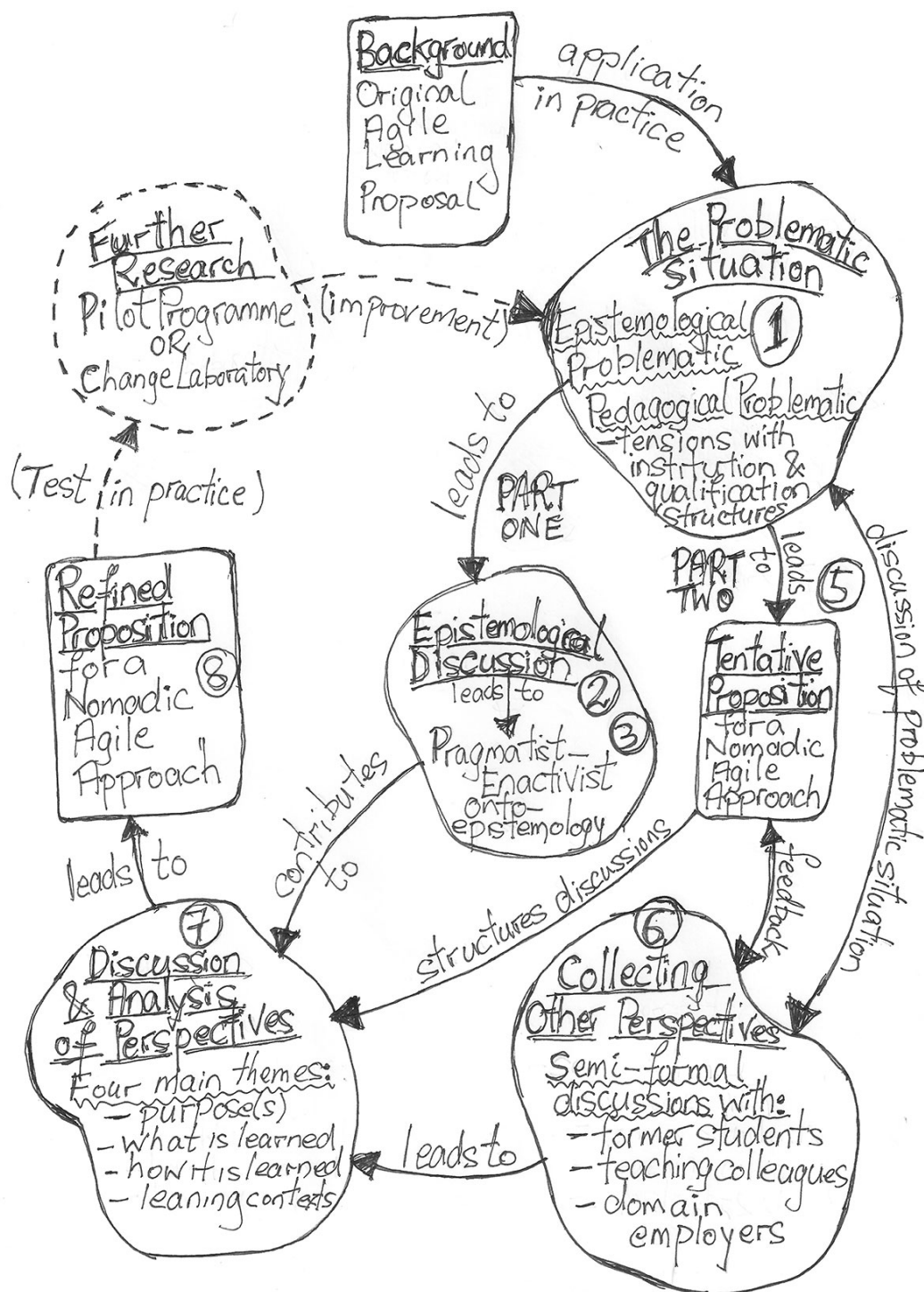

Figure 1. The inquiry as it unfolded. Starting with problematic situation applying the original agile approach in practice, this leads to the epistemological discussion in *Part One* and the pedagogical inquiry in *Part Two*.

For Donald Schön (1992), the "bureaucratically based epistemology of the schools", which views teaching "as a process of delivering information and testing students for its reception and retention" disconnects both students and teachers "from the commonplace understandings and competences built into their ordinary commerce with the world" (pp. 120–121). This disconnection is further compounded by the neoliberal commodification of education, in which knowledge and learning are packaged and sold. From this perspective, the delivered curriculum must be prescribed in advance and have defined, measurable learning outcomes. However, in my teaching practice, I experienced a structural contradiction between this institutional orientation and the agile approach—with its flexible individualized curricula and emergent learning outcomes. It is this disconnection with the world of everyday domain practices, and the constraints of institutions and qualifications, that are at the core of the practical pedagogical problematic. These form the starting point for *Part Two*, in which the pedagogical problem space is further explored through the development of a proposition for a *nomadic agile learning approach*, beyond the constraints of institutions and qualifications.

The approach to the pedagogical problematic, however, is at least partly determined by my epistemological understandings. In my original agile learning proposal, I explicitly rejected objectivist epistemologies in favour of a *dynamic* form of constructivism. My eclectic notion of *dynamic constructivism* was influenced partly by rhizomatic learning (Cormier, 2008, 2011) and partly by my nascent understanding of enactivism (Niessen, Abma, Widdershoven, Van der Vleuten, & Akkerman, 2008). On this view, dynamic and fluid *knowing* emerges from the interactions between learners and other human and non-human nodes in a learning network—in a similar way to actor-network theory (Latour, 1996). However, I did not have anything to say about how this actually happens or even what constitutes learning and knowing. Specifically, dynamic constructivism does not sufficiently account for the relationship between subjective knowing and objective bodies of knowledge, or explain how the subjective mind can come to know the objective world. This epistemological problematic not only relates to the dichotomy between subjectivist and objectivist perspectives, but also to the dichotomy between subjectivist and intersubjective (social) constructivisms—in which the question is rather: how do individual subjects become enculturated within, and contribute to, sociocultural worlds? The epistemological problematic, which is the focus of *Part One*, is explored through a series of philosophical discussions. The epistemological inquiry takes a hermeneutical

approach (Gadamer, 2013) through which my interpretive understanding emerges through a *fusion of horizons*.

In *Chapter 1*, I outline and discuss the epistemological problematic and the issues with constructivism more generally—particularly, in relation to the dichotomies between the subjective mind and the external sociocultural world, and between notions of learning as "development from within" and "formation from without" (Dewey, 1938a, p. 17). In *Chapter 2*, I then introduce Deweyan pragmatism as a naturalistic *theory of knowing* that is able to dissolve the traditional dualisms of mind-world, mind-body, theory-practice and thinking-action. At the core of Dewey's philosophy is his concept of *experience* as the transaction between organisms and their environment. For Dewey, *knowledge* does not exist either as something external to the body-mind organism, or as internal mental structures. Rather, he conceives *knowing* as a dynamic mode of transactional experience between encultured human subjects and their sociocultural-material worlds. As knowing is always situated and transactional, rather than being strictly an epistemology, Deweyan pragmatism is better understood as an *onto*-epistemology—in a similar way to Karen Barad's *agential realism* (Barad, 1996). *Learning*, from the Deweyan view, is seen as a process of adaptation and attunement within situated experience—involving integrated modes of thinking and action that lead to the formation and reformation of body-mind habits.

In *Chapter 3*, the epistemological inquiry continues with a comparative discussion of other similar practice-orientated perspectives. Donald Schön's notions of *knowing-in-action* and *reflection-in-action* (Schön, 1992) provide a more nuanced understanding of the fine-tuned experimental learning involved *in* practice. Lev Vygotsky's *activity theory* (Vygotsky, 1978), despite some underlying differences with pragmatism, provides insights into the sociocultural emergence of mind. The *existential phenomenology* of Martin Heidegger, Hans-Georg Gadamer and Maurice Merleau-Ponty (Van Manen, 2014), in a similar way to pragmatism, can be thought of as onto-epistemologies of situated knowing *in-the-world*. Merleau-Ponty's *phenomenology of embodiment*, which has strong similarities to Dewey's notion of the integrated body-mind, provides the philosophical underpinning for *enactivism* (Varela, Thompson, & Rosch, 1991). Enactivism, which also draws on evolutionary biology and contemporary cognitive neuroscience, shares a non-representational understanding of cognition with pragmatism—as a skillful embodied enaction in-the-world. In a similar way to Dewey's notion of experience, *cognition* is conceived by enactivists in terms of

the dynamical interaction between organisms and their environment (Gallagher, 2017). Karen Barad's *agential realism* (Barad, 1996), also conceived as an onto-epistemology of material-cultural *intra-actions*, is perhaps able to provide a more in-depth account of the phenomenal structure of experience. The chapter concludes with a brief discussion of Jacques Derrida's *deconstruction* in relation to Deweyan *reconstruction* (Garrison, 1999). These discussions lead to a more multi-dimensional understanding of dynamical *knowing* and *learning as* and *in* lived experience. From this emerges what I characterize as a *pragmatist-enactivist onto-epistemology* of situated knowing—as *skillful transacting-in-the-world*.

In *Part Two*, armed with a pragmatist-enactivist onto-epistemology, I return to the pedagogical problematic of applying agile learning approaches in practice. Although Dewey's theory of experimental learning and inquiry offers a general form, it does not provide any specific methodologies or methods (Biesta & Burbules, 2003). For this task, I turn to a combination of approaches that are consistent with the general pragmatist framing. These are outlined and discussed in *Chapter 4*. From third-generation activity theory, I draw on *expansive learning* (Engeström & Sannino, 2010) as an action-orientated learning cycle. *Soft systems methodology* (Checkland & Poulter, 2010) offers a systematic approach to messy human problematic situations. *Design thinking*, reconceived as *design practice* (Dalsgaard, 2014; Kimbell, 2012), provides us with a *solution-led* design inquiry paradigm distinct from traditional academic approaches (Cross, 2006). This is complemented by *agile development* (Beck et al., 2001) and *lean startup* (Ries, 2011) approaches to developing new products and services. Design thinking/practice, agile development and the lean startup approach all involve iterative cycles of rapid ideation, prototyping and testing-—as a way of simultaneously exploring problems and developing solutions. I also draw on my own practical teaching experience, or *practical reflexivity* (Rosiek & Atkinson, 2005).

In *Chapter 5*, the pedagogical problematic is outlined and discussed in more detail. Following Dewey's call for educational research to be grounded in educational practice (Biesta & Burbules, 2003), as well as Schön's (1992) call for relevance over rigor, the pedagogical inquiry starts with my own teaching experience. In particular, it begins with the problematic situation I experienced while applying an agile learning approach within a graduate diploma of creative technologies. From an expansive leaning perspective, the problematic situation is seen in terms of the tensions and

contradictions between the agile approach and traditional education models—embedded within educational institutes and qualification frameworks. From the problematic situation, I formulate a tentative proposition for a nomadic agile learning approach that moves beyond the constraints of educational institutions and qualifications—out into the wider domain of practice. Following a *design practice* approach, and consistent with Cross's (2006) call for a solution-led design inquiry approach, the tentative proposition is then used to further explore the problematic situation.

In the next phase of the inquiry, I set out to collect the perspectives of other participants involved in the broader learning-work activities. These include former students, teaching colleagues and domain employers. Loosely aligning with the *finding out* phase of the soft systems methodology, I held a series of semi-formal interviews. These took a conversational form in which I asked a number of open-ended questions about interviewees' experiences of the agile learning approach. I also presented a rough sketch of the nomadic agile proposition for feedback and discussion. Rather than being considered a primary data source, however, the purpose of the conversations was to gain a sense of their perspectives in a hermeneutical way, in order to deepen my own interpretive understanding of the problematic situation. The conversations are summarized in *Chapter 6*—along with some initial cursory thoughts.

The implications of the various perspectives are then discussed in more depth in *Chapter 7*, in relation to both the pragmatist-enactivist onto-epistemology and my own interpretive understanding, and are organized around four main themes. The first relates to the multiple *purposes* of the nomadic agile course, and how different perspectives might be integrated into a more generalized purpose. The second theme relates to *what* specifically needs to be learned in order to become a domain practitioner—which I refer to as the *curriculum*. In particular, it centers around how domain-specific tool and technology use, creative thinking, problem-solving, design approaches, communication skills and social skills can be dissolved within a pragmatist-enactivist understanding of whole integrated practice. The third discussion theme relates to the *pedagogy*, or *how* the whole integrated practices can be learned. From the pragmatist-enactivist perspective, in which learning emerges from transactional experience, the learning of practices necessarily happens *through* practice—situated within dynamically unfolding learning-practice situations. The final

discussion is around the learning-practice situations themselves, and how these might be dynamically co-constituted by the participating learners, teachers, practitioners and workplaces. I also discuss how these might be navigated as nomadic learning journeys. The discussions then lead to a more refined proposition for a nomadic agile learning approach in *Chapter 8*.

Rather than being a learning *model* that can be applied generally to all situations, the proposition takes a speculative *what-if* form, as an *invitation* to an open conversation (Sehgal, 2014). Rather than thinking of employers, teachers and learners as separate groups with their own distinct and conflicting purposes, they are better thought of as interdependent functioning parts within the transaction space of the nomadic agile course. From this emerges a shared purpose of *preparing learners for working life as domain practitioners*, in which employability skills and life skills collapse within the broader notion of working-life skills.

What needs to be learned, then, for working life as a domain practitioner, are *domain practices*. Although these include the use of domain-specific tools, technologies, materials, conceptual frameworks, methodologies and methods, they are not separate skills that are learned individually, out of context. Rather, they are means that are applied to resolve practice problems, within dynamically unfolding practice situations. As practice situations are also sociocultural situations, domain practices also involve communication and social skills for coordinating shared activities. Although generally what is being learned are domain practices, what is actually learned by individual learners emerges from the practice situations that they are part of. Rather than the nomadic agile course being defined by a prescribed curriculum, it is dynamically co-constituted by the multiple individual curricula that emerge from multiple entangled learning-practice situations.

However, *learning through practice* is not simply a matter of inducting learners into stable practice situations and structures. Rather, practice situations are living learning contexts, or *symmathesies* (Bateson, 2015), in which the learners, the practitioners and the practice situations themselves are all *learning*. In their sociocultural aspect, practice-learning situations involve complex intersubjective transactions with other people. Learning does not take place just within workplace situations—individual nomadic learning journeys involve navigating through a continuum of learning-practice situations within the wider domain of practice. These include simulated studio-

practice situations involving learners and teachers, collaborative work-world projects involving experienced practitioners and teachers, as well as working on actual work projects within workplaces. As such, individual learning journeys might not necessarily proceed along a linear path. Rather, they can unfold in unexpected directions towards co-evolving emergent outcomes.

Within dynamically co-constituted learning-practice situations, the boundaries between learners, teachers and practitioners—as well as between learning, teaching and working—are all dissolved. In this way, learning and teaching are continuous with practice. Learners are practitioners and teachers, practitioners are learners and teachers, and teachers are practitioners and learners. The nomadic agile proposition can be seen as an *invitation*—to teachers, learners, practitioners and workplaces—to participate in learning-practice situations in which they can all contribute and learn together.

On a personal note, and in keeping with Dewey's (1929) view that the outcomes of inquiry are an "unforeseeable result of an adventure" (p. 246), this project did not end up where I thought it would. My initial motivation for undertaking this project was to actually create a working prototype for a nomadic agile course in practice—possibly as a pilot programme, or *change laboratory* (Engeström & Sannino, 2010). For both Deweyan inquiry and Engeström's expansive learning cycle, it is only though implementing conceptual propositions in practice that they can be shown to work and be consolidated as stable practices or theories. So, in this regard, this inquiry falls short. However, it has still been an adventure that has profoundly changed the way I think about teaching, learning, knowing, practice and living. And there is the possibility for further research developing and running a nomadic agile course, which is still something I would like to do. However, as I have also found out, there are considerable headwinds to navigate in coming up against established structures and worldviews. That is why for Dewey (1938a), "the conduct of schools, based upon a new order of conceptions, is so much more difficult than is the management of schools which walk in beaten paths" (p. 5).

The scope of the inquiry, as it is specifically responding to my own teaching experience, is necessarily restricted to the web and interactive domains. However, despite this relatively narrow focus, the nomadic agile approach still has potential relevance for other domains, and perhaps even for education in general. As a

speculative proposition, it can be seen as a general invitation to open conversations between educational institutes, teachers, students, practitioners and workplaces to explore problematic situations in other domains. The nomadic agile approach also has potential for wider community involvement, as part of a possible *rewilding* (Monbiot, 2019) of education.

Finally, this thesis does not set out to make any definitive claims about philosophical positions or educational practices. Rather, it is an exploration of possible ways of seeing things and acting in the world—arising from my own lived experience and interpretive understandings. In this way, it needs to be read as a *proposition*—a speculative *entertaining* and *playing with* possible courses of action. For Sehgal (2014), following Alfred North Whitehead, the proposition represents an *invitation* to an open conversation—it draws attention to different ways of making sense of a situation, luring it into a new becoming.

As a lure to a new becoming, then, my proposition is that through a nomadic agile learning approach we can dissolve the walls between learning and work, thinking and making, soft and hard skills, theory and practice, and learning as *development from within* and *formation from without*. And through the underpinning pragmatist-enactivist onto-epistemology—as a synthesis of Deweyan pragmatism and contemporary enactivism—we can also dissolve the walls between subject and world, mind and body, knowing and being, and living and learning.

Part One

Establishing an Epistemological Frame

The aim of *Part One* is to establish a suitable epistemological framing for agile learning in response to the shortcomings of my original proposal for an agile approach (Stevens, 2013), which is summarized in *Appendix A*. In particular, my notion of *dynamic constructivism* conceived learning as emerging from the interaction between learners and other external nodes in a learning network (see *Figure 21, Appendix A*). However, it did not sufficiently account for how this happens, or provide an explanation of what *learning* and *knowing* actually are. Underneath this lies a core epistemological problematic regarding the relationship between internal subjective knowing and the external world—including what is regarded as objective knowledge. Any learning approach needs to be based on a clearly articulated and coherent understanding of what it means *to know* and how we come to know. Generally, objectivist approaches tend to view learning and education as a "formation from without", while [subjectivist] constructivist approaches tend to regard them in terms of "development from within" (Dewey, 1938a). However, there are inherent problems with both positions. Rather than providing a complete picture, they effectively just situate knowing/knowledge on different sides of the mind-world divide. For Dewey (1938a), we need to move beyond the "Either-Ors" of traditional ways of thinking—towards an integrated whole that is able to dissolve the walls between the subjective mind and the external world. By doing this, notions of learning as *development from within* and *formation from without* collapse into an integrated whole understanding of a "world without withins" (Garrison, 2001, p. 295).

In *Chapter 1*, I outline and discuss the epistemological problematic in more detail—in particular, the issues with constructivism and its limitations as an underpinning epistemology for agile learning. In *Chapter 2*, I then introduce Deweyan pragmatism, as a naturalistic non-dualist theory of situated knowing (Biesta & Burbules, 2003; Dewey, 1929). Based on his naturalistic concept of experience—as the transaction

between enculturated subjects and their sociocultural-material environments—Dewey is able to dissolve mind and world, as well as *development from within* and *formation from without*. In *Chapter 3*, I introduce and discuss other relevant perspectives that can address some of the shortcomings of pragmatism and contribute to a thicker and more nuanced *pragmatist-enactivist onto-epistemology* of situated knowing. These include Donald Schön's *reflective practice* (Schön, 1992); the *activity theory* (or social constructivism) of Lev Vygotsky (Miettinen, 2006; Garrison, 2001; Vygotsky, 1978); the *phenomenological* perspectives of Edmund Husserl, Martin Heidegger, Hans-Georg Gadamer and Maurice Merleau-Ponty (Gallagher, 2016; Van Manen, 2014; Gadamer, 2013); the contemporary *enactivism* of Shaun Gallagher (Gallagher, 2014, 2016, 2017); Karen Barad's *agential realism* (Barad, 1996) and Jacques Derrida's *deconstruction* (Biesta, 2013; Garrison, 2003). Armed with a pragmatist-enactivist onto-epistemology, I then return to the practical pedagogical problematic in *Part Two.* I should also point out that although I am making a distinction here between the underlying epistemological problematic and the practical pedagogical problematic, they actually form an integrated whole.

Figure 2 (below) shows the various intertwined philosophical threads that contribute (in various ways) to the *pragmatist-enactivist onto-epistemology.* Although the diagram starts with Kant, for Bernstein (2010), it is perhaps Hegel that represents the common point of departure: "Marxism, existentialism, pragmatism, and analytic philosophy were movements that arose out of, or in reaction to, Hegel" (p. 96). Although the diagram is an obvious oversimplification, and not by any means complete, it does give a general overview of the interconnections and interrelatedness of the different perspectives discussed in *Part One*. In particular, it shows where Dewey's philosophy sits in relation to Hegel, Darwin and the other classical pragmatists—Peirce, James and Mead—who were his major influences (Fesmire, 2015; Bernstein, 2010). It also illustrates the dynamic rhizomatic interrelationship between philosophical traditions. Rather than regarding them as separate rigid positions, I approach them as participants in "open-ended conversation[s] with many loose ends and tangents" (Bernstein, 2010, p. 31).
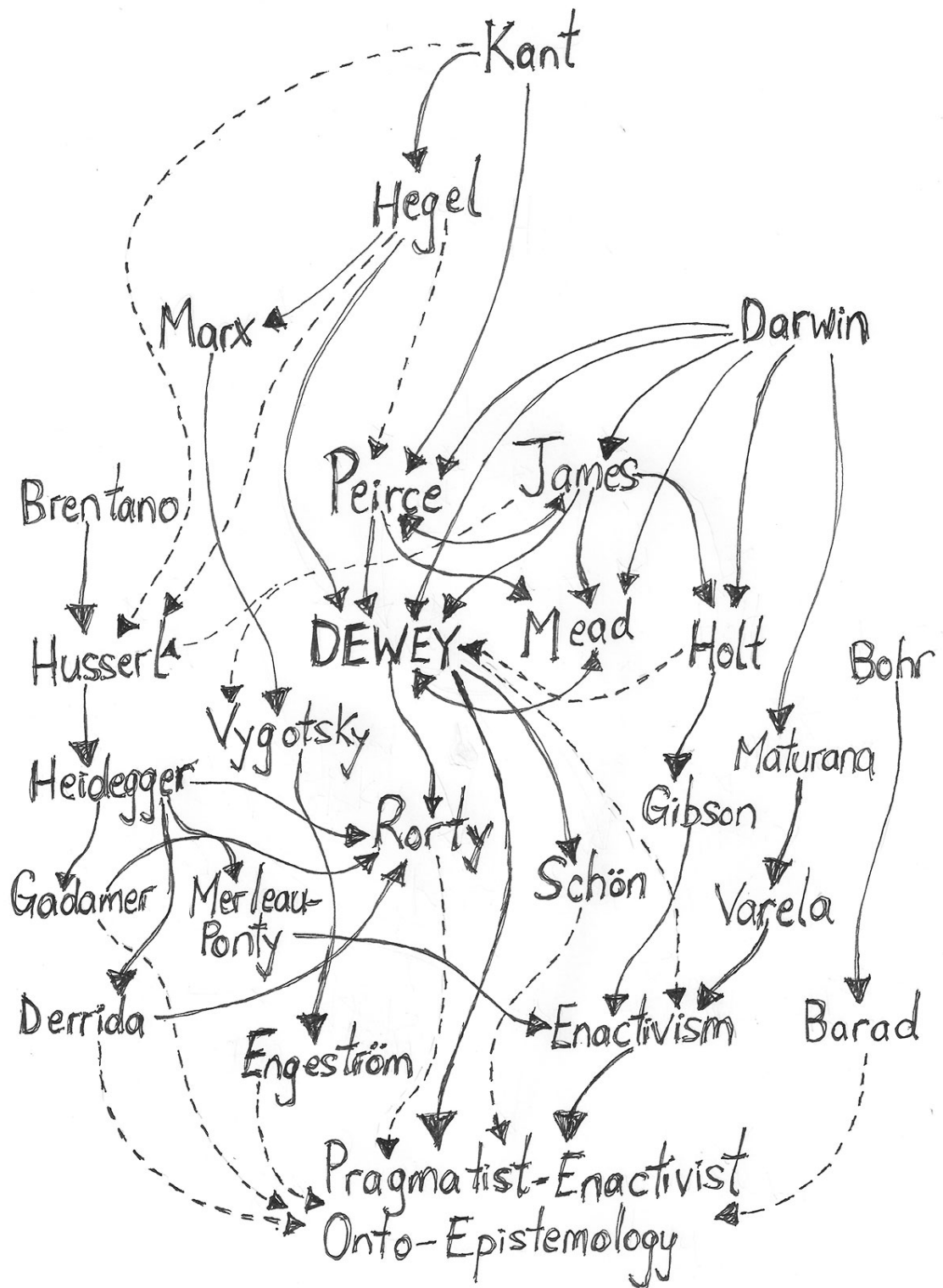
Figure 2. The various philosophical intertwinings that contribute to the pragmatist-enactivist onto-epistemology.

Chapter 1

The Epistemological Problematic

In my original agile learning proposal (Stevens, 2013), I framed the agile approach, as well as all the various learning methods it contains, within what I called a *dynamic* form of constructivism. However, rather than being an articulate and coherent epistemology, as such, it was an eclectic mix of learning theories and approaches that were not necessarily consistent with each other. This mix included constructivism, andragogy, heutagogy, learning by wholes, self-organizing learning environments, rhizomatic learning and enactivism. Although these approaches share to a certain extent a similar holistic and organic understanding of *knowing* and *learning*, they are underpinned (if articulated at all) by a variety of different epistemological understandings that are not necessarily easily resolved. Andragogy and heutagogy can be considered primarily as constructivist approaches that place a strong emphasis on learner agency—not only in relation to learners constructing their own knowledge, but also in determining their own learning direction (Hase & Kenyon, 2007; Blaschke, 2012). In addition, for Hase & Kenyon (2007), heutagogy is influenced by complexity theory. Learning by wholes (Perkins, 2009) is influenced by Vygotsky's social constructivism—while in its iterative whole aspect, it might be best understood in terms of hermeneutics (Gadamer, 2013; Bargiela-Chiappini, 2010). In self-organizing learning environments (SOLEs), Mitra (2012, 2013) refers to learning, in terms of complex systems theory, as an *emergence*. Rhizomatic learning (Cormier, 2008, 2011) borrows Deleuze & Guattari's (1987) rhizomatic plant metaphor to illustrate the decentered, subjective nature of individual knowing and learning. Enactivism (Niessen et al., 2008) has its philosophical roots in the embodied phenomenology of perception of Maurice Merleau-Ponty, but also draws on evolutionary biology, cognitive neuroscience, and Buddhist psychology (Varela et al., 1991; Thompson, 2007; Gallagher, 2017).

I introduced dynamic constructivism as a way of moving beyond the notion of knowledge as fixed internal structures—towards a more fluid and dynamic understanding of *knowing* that emerges from the complex interactions between the learner and other nodes in their learning networks (see *Figure 21, Appendix A*). However, although dynamic constructivism was informed by the eclectic mix of approaches mentioned above, I did not take into consideration their respective epistemological underpinnings, nor provide a sufficient explanation for how I arrived at this. Importantly, I did not offer any explanation of how dynamic constructivism is able to account for the relationship between individual knowing and sociocultural knowledge. Although there are a number of issues and shortcomings with dynamic constructivism, and the approaches that inform it, they also contain a number of insights which point to possible ways forward, towards a more appropriate epistemological framing for agile learning. By reinterpreting the constructivist notion of mind—as representational cognitive structures—in an organic embodied way, a picture starts to appear of how mind might emerge from the dynamical interaction between embodied subjects and their sociocultural-material worlds.

In this chapter, I will focus mainly on issues with constructivism as the epistemological framing, albeit in a dynamic form, of the original agile learning proposal. From this discussion, I hope to show that the core problem—of the relationship between subjective knowing and sociocultural knowledge—is not strictly an epistemological one, but rather can only be fully resolved at an ontological level. This will then lead to an outline and discussion of Deweyan pragmatism in *Chapter 2*, as a possible way of moving beyond constructivism.

When I initially adopted constructivism as the underlying epistemology for agile learning, I have to admit that I had a limited understanding of the deeper implications, or of the many constructivisms that it can refer to. According to Philips (1995), within mainstream educational theory and approaches, constructivism is generally accepted as orthodoxy and tends to be unquestioned. In my own experience completing the NZQA Level 5 National Certificate in Adult Education and Training, for example, constructivism was presented as the underpinning epistemology for adult education and training. "Constructivists view learning as the result of mental construction. Participants learn by fitting new information together with what they already know. People learn best when they actively construct their own understanding" (BR Training, n.d.). For me personally, the notion of the learner as a proactive agent constructing

their own knowledge and understanding had a strong appeal—especially in contrast to behaviorist and objectivist approaches, in which learning is seen a form of behaviour modification (Jonassen, 1991). Presented as a choice between constructivism and objectivism, constructivism seemed to be more intuitively aligned to my way of thinking. However, I was not fully convinced. My first concern was in relation to the building metaphor of *constructing* knowledge as if it is something solid and structural. In response to this, and influenced by rhizomatic learning (Cormier, 2008) and my nascent understanding of enactivism (Niessen et al., 2008), I proposed a form of dynamic constructivism in which "individual knowledge and understanding are not seen as static constructs that are built up like Lego blocks" but rather "takes a more enactivist view of knowing as being fluid and dynamic" (Stevens, 2013, p. 49). However, that was really all I had to say about it, without any further discussion or explanation.

The second issue I had with constructivism concerned the nature of the relationship between the individual *internal* knowledge of the knower-subject and *external* (bodies of) knowledge, within a particular domain. If individual knowledge—as in individualistic forms of constructivism—is understood as internal structures in the mind of knower, then how are external bodies of (sociocultural) knowledge able to be accounted for, and what is the relationship between the two? Furthermore, it appeared to me that internal knowing and external knowledge were often conflated without any apparent distinction or explanation. For example, Scardamalia & Bereiter (2003) refer to "knowledge building," and wonder "how to develop citizens who not only possess up-to-date knowledge but are able to participate in the creation of new knowledge" (p. 1). It is these two issues—learning as the construction of cognitive structures in the mind of the individual knower, and the disjunction between individual knowing and the external world (including sociocultural bodies of knowledge)—that I take to be the core problems with constructivism.

A particular problem in discussing constructivism, however, is that it is a rather ambiguous term and not easily defined or categorized. Despite its widespread prominence in educational theory and research since the early 1970s, the use of the term constructivism varies widely in different contexts (Philips, 1995; Davis & Sumara, 2002). For Philips (1995), constructivism has been widely embraced with an almost religious fervor, as "a 'powerful folk-tale' about the origins of human knowledge" (p. 5), but has many different competing sects. The primary confusion, or ambiguity, is

that the construction of knowledge can refer to both the construction of internal cognitive structures of individual knowers, and the construction of bodies of external public knowledge, which constitute discipline knowledge (Philips, 1995). This can be seen, for example, in Scardamalia & Bereiter's (2003) notion of *knowledge building*, which includes both forms of knowledge construction.

> And, here, then is the initial confusion: Some constructivist sects focus their attention on the cognitive contents on the minds of individual learners, others focus on the growth of the 'public' subject-matter domains, while a few brave groups tackle both—thus doubling the amount of quicksand that has to be negotiated. (Philips, 1995, pp. 5-6).

Davis & Sumara (2002) also note that rather than being one constructivism, there are many different constructivisms—radical, cognitive, situated, social, cultural, sociocultural and critical. Both Phillips (1995) and Davis & Sumara (2002) identify a similarly wide range of theorists who are often referenced in relation to their influence on constructivist epistemologies and pedagogies. These include John Dewey, Sigmund Freud, William James, Immanuel Kant, Charles Pierce, Giambattista Vico, Jean Piaget, Lev Vygotsky, Thomas Kuhn and Ernst von Glasersfeld.

However, despite these wide variances in theories and theorists, Davis & Sumara (2002) suggest that, although all forms of constructivism use the core metaphors of *construction* and *structure*, they are able to be divided into two main strands— *subject-centered*, or individualistic, and *social* constructivisms. "In colloquial terms, constructivist discourses can be separated according to the prominence afforded to one of two maxims, on whether *individuals construct their own understandings* or whether all *knowledge is socially constructed*" (p. 411). Subject-centered perspectives, generally derived from the work of Jean Piaget, include radical and cognitivist constructivisms; while social constructivisms, associated with Lev Vygotsky, include sociocultural, cultural and critical variants (Davis & Sumara, 2002). However, rather than necessarily focusing on different types of knowledge construction, both Piaget and Vygotsky shared the same underlying interest in how individuals learn and create knowledge. The primary difference is in their accounts of how this happens. Piaget's focus was mainly on the biological and psychological mechanisms of the individual learner, while Vygotsky primarily focused on the sociocultural influences on learning (Philips, 1995; Vygotsky, 1978). Both, of course, still need to be able to account for both forms of knowledge, as well as the

relationship between them. In other words, they need to account for 'mind *in* society' (Vygotsky, 1978). For the rest of the discussion in this chapter, I will focus mainly on the individualistic forms of constructivism, as derived from the work of Piaget. I will return to Vygotsky's *cultural-historical activity theory*—which has a number of similarities with Deweyan pragmatism (Miettinen, 2006; Garrison, 2001)—for further discussion in *Chapter 3*, after the introduction and discussion of pragmatism in the next chapter.

Begg (1999) identifies five main criticisms of constructivism in relation to contemporary education practice. Firstly, as constructivism focuses on the learner as the constructor of their own knowledge, he suggests there is a lack of consideration given to constructivist teaching, curriculum and assessment models. For teachers, this absence of suitable constructivist teaching models further exacerbates the tensions between learner-centered constructivist approaches and traditional behaviorist teaching, curricula and assessment approaches. Secondly, as a subjectivist approach, in its individualistic forms, there is a lack of criticality in the learner-constructed learning outcomes. In traditional approaches this is provided by the teacher. Thirdly, there is undue influence by the dominant culture of what actually constitutes knowledge. Fourthly, constructivism focuses mainly on cognitive forms of knowing and does not explain other forms of knowing, such as subconscious, embodied or intuitive knowing—or the role of emotions in learning. Fifthly, constructivism does not take into consideration advances in contemporary cognitive science and neural biology.

Adding to the confusion, Davis & Sumara (2002) suggest that although Piaget's psychological development theories are often cited as providing the foundation for subsequent individualistic forms of constructivism, his writings have possibly been misinterpreted and mistranslated. In particular, they claim that Piaget never actually used the term *constructivist* in his writings, although he did often use the terms *structure*, *construct* and *construction*. However, it is not altogether clear exactly what he meant by *construction*, as his ideas shifted over the course of his career. Furthermore, the meaning may have been lost in translation from academic French to English (Davis & Sumara, 2002, p. 411). Davis & Sumara (2002) suggest that with his background in biology, Piaget's metaphors of *structure* and *construction* may have been more biology-based than architecturally-based: "Piaget's project, in fact, might be described as an effort to construe personal learning through the metaphor of

biological forms, the structures of which are conditioned but never determined by their contexts" (p. 411). From an architectural interpretation, *construction* and *structure* suggest "deliberate planning and step-following" and in relation to teaching and learning, "basics, foundations, platforms, scaffolds, building blocks, perspectives, stances, soundness," as well as ideals such as "order, rigidity, foresight, permanence, and linear progress" (Davis & Sumara, 2002, p. 412). However, a biological interpretation might suggest a more emergent notion of structure that is always in process, and which "is neither deliberate or accidental, neither subject to confident prediction nor free of constraint" (Davis & Sumara, 2002, p. 412). By translating the French *construire* as *construct* rather than *construe*, it invites an architectural interpretation rather than a biological one. Consequently, when the term *construct* is used in reference to cognition it can result in a possible misinterpretation of Piaget's theories. As a result, Davis & Sumara (2002) suggest that the conflation of organic structures with architectural metaphors of construction have created an internal contradiction and ambiguity within the constructivism movement—between the notion of individual learners actively constructing (or construing) their own subjective knowledge and the notion of disciplinary curriculum structures. Or perhaps, as Dewey might put it, between "development from within" and "formation from without" (1938a, p. 17). In this way, there is also perhaps a parallel between Piaget's organic biological structures and Dewey's notion of organic *habits*, which I discuss in the next chapter.

> The implicit intention of these curriculum projects was thus to organize programs of study that would provide learners with solid foundations and appropriate infrastructures for their knowledge. The meanings of "structure" at the core of this perspective and within Piaget's theory could not have been much more opposed. But few seemed to notice. (Davis and Sumara, 2002, p. 413)

In addition to problems with the construction metaphor, in relation to both internal cognitive structures and external bodies of knowledge, the other main criticism levelled at constructivism is its implied relativism. For Philips (1995), this has resulted in:

> [T]reating the justification of our knowledge as being entirely a matter of sociopolitical processes or consensus, or toward the jettisoning of any substantial rational justification or warrant at all…any defensible epistemology must recognize—and not just pay lip service to—that nature exerts considerable constraint over our knowledge-constructing activities. (pp. 11–12)

Davis & Sumara (2002) also suggest that subject-centered constructivisms, that focus on individual learners making sense of the world, underplay the contribution of schooling, culture, and teaching. Piaget, for example, influenced by de Saussure's structuralism and Bourbaki mathematics, conceived individual cognition as a closed "self-referential, self-contained and internally coherent" system that did not necessarily require any external reference. "The individual knower for Piaget was thus engaged in the unrelenting project of assembling a coherent interpretive system, constantly updating and revising explanations and expectations to account for new experiences" (Davis & Sumara, 2002, p. 413). However, although this notion of the learner being closed and inaccessible might suggest a relativism or solipsism in which anything goes, provided there is internal coherence, Piaget does not deny the influence of external context and language. He just does not think that collective sociocultural phenomena directly determine individual cognition (Davis & Sumara, 2002, p. 414). However, by placing the emphasis on the nature of the emergent internal cognitive structures of individual minds, there remains a separation between mind and world, or, as Vygotsky might frame it—between mind and society. In particular, it does not account for how the subjective mind can come to know the sociocultural world of artefacts, language and bodies of knowledge.

In contrast, social forms of constructivism, such as Vygotsky's cultural-historical activity theory, do place the emphasis on how external sociocultural knowledge, artefacts and practices determine, and become internalized in, individual minds. For Vygotsky (1978), "human learning presupposes a specific social nature and a process by which children grow into the intellectual life of those around them" (p. 88). Rather than individuals constructing their world (as in subjectivist constructivism), the (sociocultural) world constructs the individual (Davis & Sumara, 2002). As I will discuss further in *Chapter 3*, however, there are still potential issues with Vygotsky's activity theory. Although Vygotsky moves some way in the direction of resolving the mind-world dichotomy and offers some useful conceptual tools for understanding the social origins of mind, he is never fully able to dissolve the internal-external separation (Garrison, 2001). For me, it is this mind-world split—at the core of the epistemological issues with both forms of constructivism, and objectivism—that needs to somehow be resolved. In particular, both individual (internal) knowing and collective (external) sociocultural knowledge needs to be accounted for, as well as the phenomenal physical-material world. Transposing this to learning—as a process of *coming to know* or *coming into knowing*—the walls between *development from within* and *formation*

from without need to somehow be dissolved within an integrated whole concept of *experience*.

In my original agile learning proposal, it was my rudimentary understanding of enactivism that provided the basis for my *dynamic* form of constructivism. In retrospect, this turned out to be quite similar to von Glasersfeld's (1988) *radical* form of Piagetian constructivism. Consequently, when I began this inquiry, I initially thought that it would be enactivism, with its understanding of cognition in terms of the dynamical interaction between organisms and their environment, that might provide the epistemological framing for this project. However, in my initial review of possible research paradigms, I came across the book *Pragmatism and Educational Research* (Biesta & Burbules, 2003). Although I was vaguely familiar with the name John Dewey, through his often-incorrect association with constructivist learning approaches, I knew very little about philosophical pragmatism. However, I was immediately drawn to the radicalness of Dewey's philosophy. It seemed to me to answer some of the underlying problems with the subjectivism and relativism of constructivism, poststructuralism and phenomenology. In particular, two things struck me. The first was how similar Dewey's concept of *experience*—as the transaction between organisms and their environment—was to the enactivist notion of *cognition*—as the dynamical interaction between the organisms and their environment (Varela et al., 1991). The second was how rarely pragmatism is referred to in contemporary education and academic theories and research. For example, in contemporary practice theory (Nicolini, 2012), pragmatism is hardly mentioned, and only then, in passing (see also Miettinen, 2006). Despite the similarity between certain aspects of enactivism and pragmatism, pragmatism is also rarely referenced in enactivist literature—with the notable exception of Shaun Gallagher (2014, 2017). This is despite pragmatism being a comprehensive and far-reaching theory of embodied practical worldly engagement that both precedes and yet, in many ways, moves beyond poststructuralism, phenomenology and enactivism (Rorty, 1982; Garrison, 1999; Hickman, 2007; Bernstein, 2010; Dreon, 2019).

So, in order to move beyond the impasses presented by individualistic forms of constructivism and, to a lesser extent, social forms of constructivism, my proposition is to (re)turn to the classical pragmatism of John Dewey. Deweyan pragmatism is not only able to dissolve the traditional mind-world and mind-body dualisms of western philosophy—through its naturalistic concept of lived experience—but it also provides

a sociocultural theory of embodied mind and situated knowing (Dewey, 1929). Importantly, as Mayer (2009) suggests, Deweyan pragmatism is able to provide the philosophical framing to integrate Vygotsky's social constructivism and Piaget's subjectivist constructivism under one umbrella.

> In framing lived human experience as the basis for all consideration of human meaning, Dewey engages both the exigencies of individual sensibility and the demands of social context…It is no accident, then, that Dewey's work provides a synthesizing lens for the work of Vygotsky and Piaget. (Mayer, 2009, p. 17)

Relating this back to agile learning, and the development of our proposition for a nomadic agile learning approach, Deweyan pragmatism offers a way of understanding *learning* in experimental terms—dynamically emerging from the transactions between subjects and their sociocultural-material worlds. From this perspective, learning can be seen as the formation and reformation of internal organic structures (body-mind habits) through a process of dynamical adjustment and attunement within complex sociocultural-material situations—that unfold in both predictable and unpredictable ways. The importance for the nomadic agile approach is that Dewey's dynamical emergent account of learning necessitates moving beyond the constraints of prescribed curricula and predefined learning outcomes, and out into learning-practice situations.

Chapter 2

Pragmatism: An Old Name for Some New Ways of Thinking

> [W]ell over half a century before the term "postmodernism" came into currency as a philosophical idea, classical Pragmatism had already adopted most of those advances, including antifoundationalism and a deflationary attitude toward traditional metaphysics that amounted to a rejection of what Jean-François Lyotard would later call a "grand narrative." From the vantage point of classical Pragmatism, however, postmodernism continues to suffer from two great difficulties that the Pragmatists had already resolved: how to account for objectivity; and how to terminate processes of infinite self-referentiality, redescription, and reinterpretation in ways that can produce reliable platforms for action. (Hickman, 2007, p. 2)

In this chapter, I will introduce and discuss the philosophical pragmatism of John Dewey—as a way of moving beyond the mind-world, mind-body and theory-practice dualisms of traditional Western philosophy. In relation to education and learning, this not only includes the dualisms found in objectivism and individualistic forms of constructivism, but also the deeper implicit dualisms of social constructivism. Although pragmatism first emerged in the late 19th century, the classical pragmatists—Charles Sanders Peirce (1839–1914), William James (1842–1910), John Dewey (1859–1952) and George Herbert Mead (1863–1931)—were, according to Bernstein (2010), ahead of their time. Not only was pragmatism radical in its day, it continues to be radical and perhaps even more relevant today—particularly in light of recent developments in embedded, embodied, enactive and extended theories of mind (Lakoff & Johnson, 1999; Johnson, 2007; Shook, 2013; Gallagher, 2017; Dreon, 2019). For Rorty (1982), pragmatism is able to move beyond both the objective realism of analytic philosophy and the relativism of poststructuralism. "On my view, James and Dewey were not only waiting at the end of the dialectical road which analytic philosophy travelled, but are waiting at the end of the road which, for example, Foucault and Deleuze are currently travelling" (Rorty, 1982, p. 6). In a similar vein,

Hickman (2007) suggests that classical pragmatism should perhaps be more accurately considered as "a form of post-postmodernism" (p. 2).

In order to move forward, then, and dissolve the walls between understandings of education as "development from within" based on "natural endowments" and "formation from without" as "a process of overcoming natural inclination…under external pressure" (Dewey, 1938a, p. 17), I am proposing a return to the pragmatism of John Dewey. For Dewey, "[t]he solution of this problem requires a well-thought-out philosophy of the social factors that operate in the constitution of individual experience" (Dewey, 1938a, p. 21). Based on his naturalistic non-dualist concept of *experience*, Dewey develops a comprehensive and far-reaching philosophy of *knowing*, *communication*, *mind*, *consciousness*, *democracy*, *education*, *ethics* and *aesthetics* in his attempt to reconstruct Western philosophy from the ground (of experience) up. Not only was Dewey heavily influenced by William James and Charles Sanders Peirce, his theories of communication and the sociocultural emergence of mind were developed in collaboration with his close friend George Herbert Mead (Fesmire, 2015; Bernstein, 2010). In this way, Deweyan pragmatism can be seen as an incorporation and further development of the ideas of Peirce, James and Mead. Of particular relevance to this inquiry is that Dewey wrote extensively on, and had an active interest in, experiential learning and education. For Dewey, the "organic connection between education and personal experience" necessitates a commitment "to some kind of empirical and experimental philosophy" (Dewey, 1938a, p. 25).

As the purpose of *Part One* is to establish a suitable epistemological framing for agile learning, as well as learning in general, this chapter focuses mainly on Dewey's *theory of knowing*. I will begin with a brief background to the origins and evolution of pragmatism. This will be followed by a discussion of Dewey's naturalistic theory of *experience*—as the dynamical interplay between organisms and their environment. On Dewey's view, rather than experience being something *in* the mind and *of* a separate external world, it is both embodied and *in-the-world*. This then leads to further discussions on how mind, as a sociocultural emergence, arises in human organisms through communication and language within sociocultural worlds. Understood by Dewey as the background field of enculturated and habituated meanings, the integrated body-mind is constantly undergoing reorganization in response to new and unfolding situations. The implication for epistemology is that *knowledge* cannot be understood in terms of structures *in* the mind that somehow represent the world.

Rather, *knowing* is a situated activity, or transaction, of the whole body-mind *in-the-world*. As such, Dewey's theory of knowing cannot be considered strictly as an epistemology, but rather as an *onto-epistemology* of *situated knowing* which dissolves the boundaries between *knowing* and *being*.

Background

The term *pragmatism* was first introduced by William James in 1898 in an address to the University of California, Berkeley, as a way of characterizing the anti-metaphysical, practice-orientated philosophy of Charles Sanders Peirce. It is derived from the Greek word *pragma*, meaning *action*, from which the words *practice* and *practical* are also derived (Bernstein, 2010). For Peirce, and all the pragmatists, a central tenet is that our conception of things and objects (as meanings) is always in their consequences for action—in other words, what they can achieve for us in their use. This is known as the *pragmatic maxim*: "Consider what effects, which might conceivably have practical bearings, we conceive the object of our conception to have. Then our conception of these effects is the whole of our conception of the object" (Peirce, 1992, as cited in Bernstein, 2010, p. 3).

Although Dewey himself started his philosophical life as a liberal Hegelian, he soon abandoned Hegel's absolute idealism after reading James's *The Principles of Psychology*, published in 1890. James's instrumental theory of concepts, as well as his biological motifs, strongly influenced Dewey's logic and own experimental instrumentalism. Dewey, like all the pragmatist thinkers, was also strongly influenced by Darwin's evolutionary hypotheses and their revolutionary philosophical implications (Bernstein, 2010; Fesmire, 2015). These influences, along with his close association with George Herbert Mead, contributed to the distinctive development of "an evolution-steeped naturalistic philosophy that conceived mind, value and existence in terms of coordinated interactions between biological organisms and their environments" (Fesmire, 2015, p. 18).

During the middle of the 20th century, pragmatism went into decline in American universities with the rise in popularity of analytic philosophy, and reached an all-time low in the 1950s. However, a revival of interest began emerging in the same decade with the criticisms of analytic philosophy by Willard van Orman Quine, Donald Davidson and Hilary Putman (Biesta & Burbules, 2003; Bernstein, 2010). This was

followed in the 1970s by a *neopragmatist* revival led by Richard Rorty, and including Richard Bernstein and Robert Brandom, which sought to engage with contemporary continental philosophers, including Hans-Georg Gadamer, Jürgen Habermas and Jacques Derrida (Bernstein, 2010; Baert, 2009; Rorty, 1982). More recently, there has been renewed interest in pragmatism, in what Bernstein (2010) calls the *pragmatic turn*, by scholars "frustrated with the methodological practices underwritten by contemporary positivist, critical, and post-structural theory" (Rosiek, 2013, p. 693). This has taken place across a range of fields, including education, philosophy, practice theory, political theory, social science, cognitive science and design (Rosiek, 2013; Bernstein, 2010; Baert, 2009).

Dewey's philosophical project can be seen primarily as an attempt to naturalize philosophy through grounding it empirically in existential lived experience (Fesmire, 2015; Dewey, 1929). Through this, he believed he was able dissolve the mind-world dualism that he thought had distorted Western philosophy.

> [I]t has upon its hands the problem of how it is possible to know at all, how an outer world can affect an inner mind, how the acts of mind can reach out and lay hold of objects defined in antithesis to them. (Dewey, 1929, p. 10)

He was particularly opposed to metaphysics, in all its various forms—that placed reality, truth and mind in separate realms beyond experience. "Since the seventeenth century this conception of experience as the equivalent of subjective private consciousness set over and against nature, which consists wholly of physical objects, has wrought havoc in philosophy" (Dewey, 1929, p. 11).

Situated Transactional Experience

At the core of Dewey's philosophy is his reconception of *experience* in naturalistic terms—as the integrated interaction between organisms and their environment. Through this move, he is not only able to merge subject and object together in unified experience, he is also able to dissolve the various derivative dualisms of mind-body, thought-action and theory-practice (Biesta & Burbules, 2003). However, rather than being thought of as an *interaction*, as such, between two separate entities of *organism* and *environment*, it should be understood more as an integrated dynamical *transaction* between inseparable parts of a single whole. "[Experience] recognises in its primary integrity no division between act and material, subject and object, but

contains them both in unanalyzed totality" (Dewey, 1929, p. 8). In Dewey's transactional account of experience, not only does the organism act on and effect change in the environment, but the environment acts on and effects change in the organism—leaving them both changed in some way. "Experience thus reaches down into nature; it has depth. It also has breadth and to an indefinitely elastic extent" (Dewey, 1929, p. 4a).

Although organisms vary considerably in complexity and sentience—from single cell organisms through to plants and animals—they are still all in some form of continuous transaction with their environments, which constitutes experience for them, albeit very different experiences. For human organisms, experience is always mediated by culture. In Dewey's anthropological understanding, culture is the accumulated historical product of human action and interaction, and includes language, practices, technology and art. As such, human experience is a complex set of transactions between the encultured body-mind organism and their sociocultural and material worlds. For humans, as complex enculturated organisms with minds, in addition to immediate primary pre/non-reflexive experience, as a felt quality, there is also derived secondary experience involving reflective thought and meanings, which is mediated by language and culture. Experience also has different modes, which, rather than being separate distinct states, all co-exist to some extent and contribute to the flavour or quality of particular experiences. These can include the practical mode (of active bodily doing), the reflective (consciousness) mode, the affective mode, the aesthetic mode, the ethical mode and the religious mode. Thinking, for example, is not considered to be something separate from experience, it is rather something humans do *as* experience. In a similar way, mind is not something separate from, or transcending the body, but both mind and body are integral functional parts of the functioning whole body-mind organism (Dewey, 1929; Garrison, 2001; Biesta & Burbules, 2003; Fesmire, 2015).

> [Experience] includes *what* men do and suffer, *what* they strive for, love, believe and endure, and also *how* men act and are acted upon, the way they do and suffer, desire and enjoy, see, believe, imagine—in short, processes of *experiencing.* "Experience" denotes the planted field, the sowed seeds, the reaped harvests, the changes of night and day, spring and autumn, wet and dry, heat and cold, that are observed, feared and longed for; it also denotes the one who plants and reaps, who works and rejoices, hopes, fears, plans, invokes magic or chemistry to aid him, who is downcast or triumphant…[I]t recognises in its primary integrity no division between act and material, subject and object, but contains them both in unanalyzed totality. (Dewey, 1929, p. 8)

Taken together in transaction, the organism and the environment form what Dewey calls the *situation*. However, rather than the organism and the environment being thought of as self-sufficient and separate entities, they are always found together, with the organism in dynamical transaction with the environment.

> They are, in effect, coupled in way such that to pull them apart is to destroy them, or treat them as theoretical abstractions. An organism never exists (and can never exist) apart from some environment; an environment is what it is only in conjunction with a particular organism that defines it…Neither the organism nor the environment should be taken in strictly objective terms precisely because they are co-relational, defined relative to each other. (Gallagher, 2017, pp. 54–55)

Human situations, involving complex sociocultural-material environments on one hand, and complex enculturated and habituated agential body-mind organisms on the other, are inherently unstable or *precarious*—constantly and dynamically unfolding in both predictable and unpredictable ways (Dewey, 1929; Biesta & Burbules, 2003; Gallagher, 2017).

> The statement that individuals live in a world means, in the concrete, that they live in a series of situations…It means that interaction is going on between an individual and objects and other persons. The conceptions of *situation* and *interaction* are inseparable from each other. An experience is always what it is because of a transaction taking place between an individual and what, at the time, constitutes his environment…The environment, in other words, is whatever conditions interact with personal needs, desires, purposes and capacities to create the experience which is had. (Dewey, 1938a, pp. 43–44)

The unstableness and precariousness of situations, potentially unfolding in unpredictable ways, has pedagogical implications in relation to the way in which we respond to the uncertainty of not knowing what to do. In these *indeterminate* situations, there is a disruption, even if only momentarily, in the integrated flow of *knowing* transaction. In response, reflective thought arises as a functional organic process, in order to make sense of the situation and re-establish knowing activity. However, reflective thought, for Dewey, is not something that arises outside of, or is superimposed on, experience. Rather, there is a movement within experience from a mode of overt bodily action towards a reflective thinking mode. Thinking is an activity—it is something that we *do*. Rather than transacting with physical objects, as in overt bodily activity, the body-mind transacts with mental conceptual objects. This integrated process—of disjunction in knowing transaction that gives rise to thinking, and then the restoration of knowing transaction—forms the basis of Dewey's notion of

experimental learning and his theory of inquiry, which I will return to in more detail later (Elkjaer, 2009; Biesta & Burbules, 2003; Miettinen, 2000).

Dewey's transactional conceptions of *experience* and the *situation* have important implications for learning, and particularly for agile learning approaches. They are able to provide an account of how human subjects come to know and learn through their transactions within sociocultural-material situations (Dewey, 1938a). In my original agile proposal (Stevens, 2013), I proposed that learners learn through their interactions with various resources, projects and other people. However, I did not provide any account of how this actually happens, or even what it means to learn or to know. Dewey's understanding of the subject always existing in some environment—as an integral part of the whole situation—provides the basis for understanding *knowing* as a situated activity that is co-constituted by the subject and the environment in dynamical transaction (Dewey, 1929; Gallagher, 2017). For Fesmire (2015), "Dewey's conception of interactive mediation draws the arrow in both directions: it neither subjectivizes objects, in the way of strict constructivism, nor objectifies subjects, in the way of spectator theories of knowledge" (p. 96). *Learning*, on this view, then, might be seen as a process of adaptation or adjustment to the unfolding situation. However, it is not just the experiential transactions taking place within the current situation that determine what is known and what is being learned, but also the subject's past experiences and histories (Dewey, 1938a).

Dynamic Habits and the Experiential Continuum

Experience is not only integrated in relation to the body-mind organism and its sociocultural-material environment, and in all its various modes and qualities; it is also continuous through time, with past experiences living on in present and future experiences. Dewey calls this the *experiential continuum* or the *principle of the continuity of experience*. "The two principles of continuity and interaction are not separate from each other. They intercept and unite. They are, so to speak, the longitudinal and lateral aspects of experience. Different situations succeed each other" (Dewey, 1938a, p. 44). As living involves a continuous movement through a succession of unfolding situations, understandings and skills learned in previous situations are able to be carried over to cope effectively with future situations. As such, experience has an integrated temporal character. The consequences of past experiences and experiments are able to be used as tools, or instrumentalities, in the

present situation in order to affect future consequences (Dewey,1938a; Biesta & Burbules, 2003). In other words, the past and the future are always *present* in the present, with the process continuing "as long as life and learning continue" (Dewey, 1938a, p. 44).

For Dewey, the main vehicle for the continuity of experience is *habit*, where habit is understood as a predisposition to act in particular ways in particular situations. However, rather than habits being rigid or fixed structures that are merely applied as routine procedures, they are able to dynamically adapt and change over time. As experience involves both acting on and being acted on, it is co-constituted by the particular conditions of each situation, as well as the habits of the organism. Not only do we adapt our habits to particular situations, the habits themselves are also changed through our ongoing experiences in the form of changes to the organic structure of the organism (Dewey, 1929, 1938a; Biesta & Burbules, 2003). As habits are *of* the integrated body-mind organism, they are both mental and embodied. For example, walking or riding a bike might be considered primarily embodied habits, while reasoning processes might be considered mental or thinking habits. However, this is misleading as all habits are both mental—although not necessarily conscious—and embodied. Habits, however, do not constitute *knowing* as such. For pragmatists, *knowing* is the coordinating transaction *between* the habituated body-mind and its sociocultural-material environment. In other words, habits are potentialities for knowing that are actualized as knowing action in particular situations. For example, I might have a bike-riding habit but the *knowing* how to ride a bike is *in* the action of riding the bike. As such, knowing is always *situated knowing*.

> At bottom, this principle [the continuity of experience] rests upon the fact of habit, when *habit* is interpreted biologically. The basic characteristic of habit is that every experience enacted and undergone modifies the one who acts and undergoes, while this modification affects, whether we wish it or not, the quality of subsequent experiences…It covers the formation of attitudes, attitudes that are emotional and intellectual; it covers our basic sensitivities and ways of meeting and responding to all the conditions that we meet in living. (Dewey, 1938a, p. 35)

In relation to this inquiry into nomadic agile forms of learning, it is this process of the formation and reformation of embodied and mental habits, through continuous multi-modal situated experience, that I will consider to be *learning*. Seen in this way, learning is continuous with life. "It is learning in the sense of the acquisition of a complex set of predispositions to act" in which "the world becomes more

differentiated" and "infused with meaning" (Biesta & Burbules, 2003, p. 37). However, this is not necessarily the full story, as there is perhaps another sense of the term *learning*—as a type of adjustment or attunement of habits, as part of their functional instrumental use in action, in orientating and reorientating the body-mind to the particular conditions of particular situations (Ilundáin-Agurruza, Gallagher, Hutto, & Beam, 2020; Garrison, 2001; Schön, 1992). This type of learning might be thought of as an instantaneous or momentary situated learning that is continually and dynamically emerging in transactional experience. This is what Schön (1992) describes as the momentary process of disruption in *knowing-in-action*, that gives rise to *reflection-in-action* and the subsequent restoration of *knowing-in-action*.

I will return to Schön's concept of *reflective practice* for further discussion in *Chapter 3*. For now, I will further elaborate on Dewey's theory of *mind*, how it relates to the integrated *body-mind* and how it is differentiated from *consciousness*. *Mind*, for both Dewey and Mead, is a sociocultural construct that emerges through communication and language (Dewey, 1929; Simpson, 2009).

Communication, Language and Mind

> Of all affairs, communication is the most wonderful…When communication occurs, all natural events are subject to reconsideration and revision; they are re-adapted to meet the requirements of conversation, whether it be public discourse or the preliminary discourse termed thinking. (Dewey, 1929, p. 165)

For Dewey (1929), it is communication between organisms that provides the condition for the emergence of mind and culture. It forms a bridge between immediate primary (sensed and felt) experience of raw things and events, and derived secondary experience infused with meaning. In Dewey's anthropological account, language, culture and mind co-emerge and co-evolve through social communication as the coordination of action. This contrasts with traditional understandings in which mind is seen as the condition for communication and where communication is thought of in terms of information being transferred from one mind to another. On Dewey's view, communication is something that is done in common between people, as a dynamical intersubjective transaction. The practical purpose of communication is to establish cooperation in shared activities in which the activity of each person is modified and regulated in some way (Dewey, 1929; Biesta, 2013).

Rather than the social being seen as the meeting of separate, already formed minds, mind emerges from the social. Human language and signs originally emerged from the natural patterns of association of early humans. "The significant consideration is that assemblage of organic human beings transforms sequence and coexistence into participation" (Dewey, 1929, p. 175). Gestures and cries, as modes of organic behavior, become language when they are associated with means for assisting and directing coordinated activity. When things and events are able to be named and spoken about, they become meaningful, and mind emerges. However, rather than meanings being given by mind, for Dewey, mind *is* meaning. And with the emergence of mind, meanings are able to be "infinitely combined and re-arranged in imagination" forming new meanings and possibilities for action (Dewey, 1929, p. 166). Once things and events are able to be reflected on and spoken about, directions for tool and technology use are able to be given and teaching and learning emerges (Dewey, 1929).

Following Peirce's pragmatic maxim, Dewey situates the meaning of objects in their consequences or instrumentalities, rather than in their physical material nature. "Meanings are rules for using and interpreting things; interpretation being always an imputation of potentiality for some consequence" (Dewey, 1929, p. 188). The meaning of tools is in their use as means to achieve particular ends, and as such they are "intrinsically relational, anticipatory, predictive" (Dewey, 1929, p. 185). Language, for Dewey, is the "tool of tools" (1929, p. 168), as it is used instrumentally to direct and coordinate activities, including the use of tools. Furthermore, as a mode of interaction, language is considered to be a relationship between members of a social grouping with shared habits of speech, rather than a separate stand-alone thing. Reflective thought, as internal discourse, is also dependent on language as it is derived from communication with others. "If we had not talked with others and they with us, we should never talk to and with ourselves" (Dewey, 1929, p. 170). As language and meanings are sociocultural products, self and agency, which co-emerge with language and meanings, are also sociocultural products. "Through speech a person dramatically identifies himself with potential acts and deeds; he plays many roles, not in successive stages of life but in contemporaneously enacted drama. Thus mind emerges" (Dewey, 1929, p. 170).

As well as being a means for social cooperation, communication, in the sense of being a sharing and participation in the cultural life of a community, can also be considered as an end in itself.

> Communication is uniquely instrumental and uniquely final. It is instrumental as liberating us from the otherwise overwhelming pressure of events and enabling us to live in a world of things that have meaning. It is final as a sharing in the objects and arts precious to a community, a sharing whereby meanings are enhanced, deepened and solidified in the sense of communion. (Dewey, 1929, pp. 204–205)

However, Dewey also warns us that potential distortions and inequalities can occur when these instrumental and final functions are separated. "Intelligence is partial and specialized, because communication and participation are limited, sectarian, provincial, confined to class, party, professional group" (Dewey, 1929, p. 205).

Not surprisingly, communication and participation are at the core of Dewey's philosophy of education. However, learning through communication and participation does not simply entail "*being in* a social environment", rather it entails "*having* a social environment" (Biesta, 2013, p. 29) in which activity is in authentic and open communicative partnership with others. "Education…is about those situations in which one really has an interest in its accomplishment just as others have. In those situations one's ideas are changed as a result of the participation" (Biesta, 2013, p. 29). For Dewey (1929), common understanding is something that emerges from participation and cooperation, rather than something that is required as a condition for cooperation. In relation to agile teaching and learning situations, Dewey's notion of communication can form the basis for participation in group projects, the general community of learners and teacher-student relationships. His theory of communication also points towards a way of facilitating integrated learning-work transaction spaces between learning courses and workplaces. In relation to the agile learning approach itself, it is possible to frame the various interactions that the learner participates in in a more nuanced way—as different modes of transactional experience. Interactions with tools and technologies can be seen in terms of Schön's (1992) metaphor of a conversation with the materials of the situation involving *knowing-in-action* and *reflection-in-action,* while interactions with other students, teachers, and practitioners—within various learning situations such as classrooms, group projects and workplaces, etc.—can be understood in terms of Deweyan communication as participatory intersubjective transactions. In this way, education

and learning becomes something that teachers, students and practitioners do together, and in which the outcomes are uncertain and risky (Biesta, 2013).

In Dewey's naturalistic monism, *mind*, as with his notions of *experience* and *communication* from which it emerges, is also considered to be both subjective and objective. In contemporary cognitive science parlance, not only is Dewey's notion of mind *embodied* and *enactive*, it is also socioculturally *embedded* and environmentally *extended* (Gallagher, 2017). In contrast to traditional dualistic accounts, mind is not considered by Dewey to be something that exists in another realm, disconnected from natural existence. Rather, it is a natural event that occurs *in* the world and that emerges from natural processes of transaction between a human organism and their sociocultural and material worlds. "Personality, selfhood, subjectivity are eventual functions that emerge with complexly organized interactions, organic and social" (Dewey, 1929, p. 208). For Dewey, individuals do not *have* minds, as separate things that they possess. Rather, individual minds are emergences from transactional experience, and consequently also have integrated objective and subjective aspects.

In their objective (public) aspect, individual minds are part of sociocultural worlds in which they are *at home*; while in their subjective (private) aspect, they are initiating intentional agents of action and change—although always as functional parts of the sociocultural whole. In other words, individual minds can be seen as habituated enculturations that emerge from intersubjective communication with others, within the sociocultural communities in which they participate. Sociocultural worlds made up of language, norms, institutions, tools, technologies, rules, practices, etc., provide the structural framework and worldview in which individuals function and are oriented by (Dewey, 1929).

> [T]he mind that appears *in* individuals is not as such individual mind. The former is in itself a system of belief, recognitions, and ignorances, of acceptances and rejections, of expectancies and appraisals of meanings which have been instituted under the influence of custom and tradition. (Dewey, 1929, p. 219)

Yet, on the other hand, individuals also "exhibit preference and centeredness" and are initiators of instrumental action in order to modify their situations. "Individual thought and desire denote a distinctive and unique mode of existence, an object held in solution, undergoing transformation, to emerge finally as an established and public object" (Dewey, 1929, p. 220). In other words, Dewey sees subjectivity as the natural

functional mental process involved in directing the transformation of what *is* to some projected future state. In this way, mind is both action-orientated—in its instrumentality—and future-orientated towards a desired end-in-view. For Dewey, this "shows the intermediate position of subjective mind: it proves it to be a mode of natural existence in which objects undergo directed reconstitution" (Dewey, 1929, p. 220). Combined with the principle of the continuity of experience, in which experiences live on in future experiences through the medium of habit, individuality is consequently seen as "historic, intermediate, temporally relative and instrumental" (Dewey, 1929, p. 202).

Dewey's notion of individual minds—as part of integrated sociocultural-material worlds—situates *mind*, *knowing* and *learning* not only within present unfolding situations, but also historically and genealogically within unfolding sociocultures over longer timescales. These include individual development timescales and the longer anthropological timescales of cultural development. Furthermore, individual minds and the sociocultural worlds that they are embedded in co-constitute each other and co-evolve. There is a dynamical co-determining relationship in which multiple transacting individual agencies influence the sociocultural whole and, in turn, the sociocultural whole influences the individual agencies (Dewey, 1929). The implication for learning situations is that they are co-determined by both the participants (teachers, learners and practitioners) and the various sociocultural worlds they are part of. Consequently, it is not just the situated participants that undergo transformation or learning. The situations themselves are also transformed in some way and undergo a form of learning. In relation to agile learning, this supports the notion of the *domain of practice* (see *Figure 20*, *Appendix A*) as the overarching sociocultural context, and learning situation, that both determines and is determined by individual domain practitioners and their practices. It also points to potential tensions and contradictions between agile learning approaches and institutional learning situations, with objectivist and constructivist epistemological and pedagogical sociocultures.

Consequently, the agential freedom of thought and transformation, in which individual minds are able to engage, requires an open attitude to questioning existing societal and cultural practices, norms and meanings—including those embedded in educational institutions. However, as the outcomes which emerge are uncertain and cannot be known in advance, there is always a certain amount of risk.

> Freedom of thought denotes freedom of thinking; specific doubting, inquiring, suspense, creating and cultivating of tentative hypotheses, trials or experimentings that are unguaranteed and that involve risks of waste, loss and error…Every thinker puts some portion of an apparently stable world in peril and no one can wholly predict what will emerge in its place. (Dewey, 1929, p. 222)

For Dewey, it is this freedom of thought that is the basis of his conception of education as growth and transformation—of both the individual and the sociocultural world that they are a part of. As such, any truly open inquiry is an inherently risky business.

> Surrender of what is possessed, disowning of what supports one in secure ease, is involved in all inquiry and discovery; the latter implicate an individual still to make, with all the risks implied therein...The old self is put off and the new self is only forming, and the form it finally takes will depend upon the unforeseeable result of an adventure. (Dewey, 1929, pp. 245–246)

The implication for education is that learning outcomes are not things that can be necessarily defined in advance. Rather they are the "unforeseeable result of an adventure" (Dewey, 1929, p. 246) that are co-determined by both the learner-subject and their sociocultural-material learning situations. The learner-subject carries with them their past experiences and understandings—including their past enculturations within multiple different sociocultural worlds. The learning situations are also co-determined by the various participants—all with their own experiential histories and enculturations. These include not only learners, teachers and domain practitioners but also workplaces, educational institutions and qualification frameworks, all of which co-determine each other in complex dynamical transaction. This stands in tension with the dominant educational view that the curriculum and learning outcomes can somehow be predetermined and then achieved by all learners. Dewey's understanding of the emergent and risky nature of inquiry also has implications for this inquiry. Rather than knowing in advance where the inquiry would end up, it too has emerged from my own adventure of discovery through multiple unfolding situations.

The Integrated Body-Mind

However, individual minds, for Dewey, are not just integrated functional parts of sociocultural worlds. They are also integral parts of whole *body-minds.* Mind is a naturally arising function of human organisms that developed from the more basic embodied sensitivity and feelings that organisms have towards their environments.

Consequently, mind is inseparable from the body and together form the whole body-mind organism.

> Every "mind" that we are empirically acquainted with is found in connection with some organized body. Every such body exists in a natural medium to which it sustains some adaptive connection: plants to air, water, sun, and animals to these things and also to plants. Without such connections, animals die; the "purest" mind would not continue without them…At every point and stage, accordingly, a living organism and its life processes involve a world or nature temporally and spatially "external" to itself but "internal" to its functions. (Dewey, 1929, pp. 277–278)

This integrated notion of the body-mind stands in contrast to the body-mind dualism of traditional Western philosophy. For Dewey (1929), by separating life from nature and mind from organic life, traditional theories created mysteries about how separate minds can know about the external world.

> To see the organism *in* nature, the nervous system in the organism, the brain in the nervous system, the cortex in the brain is the answer to the problems which haunt philosophy. And when thus seen they will be seen to be in, not as marbles are *in* a box but as events are in history, in a moving, growing never finished process. (Dewey, 1929, p. 295)

On Dewey's view, physical matter, psycho-physical life and mind are not separate kinds of Being. Rather, they represent a continuum "of increasing complexity and intimacy of interaction among natural events" (Dewey, 1929, p. 261). Dewey characterizes living organisms—as distinct from purely *physical* inanimate objects—as being *psycho-physical.* The distinguishing feature of living organisms is the *need-demand-satisfaction* nature of their activities. Through this they obtain support from their environment in order to maintain their life processes. By developing sensitivities to patterns of activity, the organism is able to exercise a selective bias in its transactions with the environment. "Responses are not merely selective, but are discriminatory…This discrimination is the essence of sensitivity. Thus with organization, bias becomes interest, and satisfaction a good or value and not a mere satiation of wants or repletion of deficiencies" (Dewey, 1929, p. 256). In more complex animals, these basic sensitivities develop into more nuanced *feelings* of varying quality which correspond to different phases of activity such as "initiating, mediating, fulfilling or frustrating" (Dewey, 1929, p. 258). However, as animals do not know they have these feelings and are not aware of meanings, for Dewey (1929), their activity cannot be considered *mental*.

Mind arises when interaction with others reaches a sufficient level of complexity though language and communication. For *minded* human organisms, the feelings and qualities of situations are discriminated and make sense. "This state of things in which qualitatively different feelings are not just had but are significant of objective differences, is mind. Feelings are no longer just felt. They have and they make *sense*; record and prophesy" (Dewey, 1929, p. 258). Sense, as distinct from feeling, "has a recognized reference; it is the qualitative characteristic of something, not just a submerged unidentified quality or tone" (Dewey, 1929, pp. 260–61). Sense is also distinct from signification, whereby the quality is used as a sign or index for something else; rather, sense is "an immediate and immanent meaning; it is a meaning which is itself felt or directly had" (Dewey, 1929, p. 261).

For Dewey (1929), the various functional aspects or modes of mind—such as memory, imagination, expectation, abstraction, generalization and inference—are not separate distinct things. Rather, they form an integrated whole. They arise naturally from the organism's need to conserve the past, in order to be able to intervene instrumentally and intelligently in the present to affect potential temporally and spatially distant ends. When present contact activities are directed towards the future and spatially distant ends-in-view, they become instrumental means.

> Man is led or drawn rather than pushed. The immediate is significant in respect to what has occurred and will occur; the organic basis of memory and expectation is supplied. The sub-ordination of contact-activity to distance activity is equivalent to the possibility of release from submergence in the merely given, namely, to abstraction, generalization, inference. (Dewey, 1929, p. 270)

In higher organisms, current actions are informed and conditioned by the consequences of previous activities through the formation of habits. In addition, the experiences of individual body-minds are integrated in the behavior of others through communication and language. In this way, people are able to learn from the experience of others, as well as their own experience. Not only does the number and variety of habits increase with communication and language, they are able to be linked together in new and novel ways. This results in the formation of further habits of actively seeking and finding new connections and associations—involving search, experimentation and inquiry. "By a seeming paradox, increased power of forming habits means increased susceptibility, sensitiveness and responsiveness…Hence

instability, novelty, emergence of unexpected and unpredictable combinations" (Dewey, 1929, p. 281).

> [A]n environment both extensive and enduring is immediately implicated in present behaviour…[T]he remote and the past are "in" behaviour making it what it is. The action called "organic" is not just that of internal structures; it is an integration of organic-environmental connections…Not merely its own distant world of space time is involved in its conduct but the world of its fellows…Human learning and habit forming present thereby an integration of organic-environmental connections so vastly superior to those of animals without language that its experience appears to be super-organic. (Dewey, 1929, pp. 279–280)

This notion of human learning as complex body-mind habit formation, across space and time and through participatory intersubjective communication, has important implications for agile learning. Firstly, it highlights the importance for learning to be situated within a community of learners—both at the level of the immediate cohort or class group learning together, and also within other social practice situations such as workplaces, collaborative projects and even the wider domain of practice. Secondly, habits of inquiry—involving questioning, searching, making connections and experimentation—also need to be formed through participating in sociocultural communities of learning and inquiry. Thirdly, the organic embodied nature of habits means that learning and knowing are not solely conscious mental activities. They can also be subconscious and bodily—involving feelings and emotions. As such, learning and knowing experiences, like all experiences, are firstly *felt* in the body and necessarily have an emotional and aesthetic quality. Taking these together, then, learning situations must be primarily understood as sociocultural-affective situations. This means that learners not only need to participate in experimental learning and inquiry—in open communication with other learners, teachers and practitioners—but also need to feel emotionally supported and encouraged. In other words, the *felt* aesthetic quality of learning experiences needs to be considered—not just for the learners but for all the participants.

Consciousness, Meanings and Reflective Thought

In this account of learning—as the process of formation and transformation of body-mind habits, in which meanings are made and remade—Dewey (1929) makes an important distinction between *mind* and *consciousness*. However, the meaning of the term *consciousness* is not necessarily self-explanatory and varies widely across

different philosophical, psychological, cognitive science and everyday contexts. So, I firstly need to clarify what Dewey actually means by *consciousness*, and how it relates to his concept of *mind*. For Dewey, *mind* is associated with *meanings* of things, events, feelings, qualities, concepts, etc., and emerges with communication and language. In this way, it can be characterized as a general field or organic system of habituated meanings possessed by the integrated body-mind. *Consciousness*, on the other hand, is associated specifically with the realm of reflective thought and ideas. It is seen by Dewey as the functional process by which the body-mind organism re-orientates itself when there is a rupture in the field of mind, and existing meanings cannot make sense of particular situations.

> There is thus an obvious difference between mind and consciousness; meaning and idea. Mind denotes the whole system of meanings as they are embodied in the workings of organic life; consciousness in a being with language denotes awareness or perceptions of meanings; it is the perception of actual events, whether past, contemporary or future, *in* their meanings, the having of actual ideas. The greater part of mind is only implicit in any conscious act or state; the field of mind—of operative meanings—is enormously wider than consciousness. Mind is contextual and persistent; consciousness is focal and transitive. Mind is, so to speak, structural, substantial; a constant background and foreground; perceptive consciousness is process, a series of heres and nows. Mind is a constant luminosity; consciousness intermittent, a series of flashes of varying intensities. (Dewey, 1928, p. 303)

Dewey's notion of consciousness, then, refers specifically to the *awareness* of meanings in *minded* human organisms. It does not, as the term is often used, refer to the immediate feelings and sensitivities of *non-minded* organisms. Rather, it refers to "meanings actually perceived, *awareness* of objects: being wide-awake, alert, attentive to the significance of events, present, past, future" (Dewey, 1929, p. 298). Other animals and plants, for example, may be sensitive to qualitative differences in their interactions with their environment, but on Dewey's view, these are merely anoetic feelings without meanings. However, although immediate qualities or feelings, in themselves, do not constitute the meaning-awareness consciousness of minded organisms, they do provide the existential starting point. As such, they imbue perceptual awareness and language with an immediate qualitative *feel* that differentiates signs from each other (Dewey 1929, p. 299). Consequently, perceptual awareness is not just a mental reflective process but also involves emotion, sensation and desire. Qualitative feelings are also at play in the human subconscious, with

habitual subconscious meanings able to exert a strong influence on organic feelings, which are experienced as *intuitions* (Dewey, 1929).

> [W]e continually engage in an immense multitude of immediate organic selections, rejections, welcomings, expulsions, appropriations, withdrawals, shrinkings, expansions, elations and dejections, attacks, wardings off, of the most minute, vibratingly delicate nature. We are not aware of the qualities of many or most of these acts; we do not objectively distinguish and identify them. Yet they exist as feeling qualities, and have an enormous directive effect on our behaviour. (Dewey, 1929, p. 299)

When mind—as the embodied contextual field of habituated and enculturated meanings—encounters uncertain situations that do not make sense, it undergoes a perturbation or rupture. In response, consciousness—which is associated with reflective thought—is the process, or phase, of reorganization and reorientation of mind, in the making sense of the situation. Mind can be thought of as the vague and extensive, taken-for-granted background of conscious experience that "suffuses, interpenetrates, colors what is now and here uppermost; it gives them sense, feeling, as distinct from signification" (Dewey, 1929, p. 306). In contrast, *consciousness* can be thought of as a series of intermittent and separate conscious perceptions that focus on the currently most urgent and immanent need. Past meanings influence both the perceptual meanings of now-unfolding events and the expectancy of future events. They form a "continuum of meaning in process of formation" that ties together the intermittent perceptions and which, in itself, also forms a meaningful event (Dewey, 1928, p. 308). As such, *mind* can be thought of as the story, or narrative, that ties together the intermittent episodes as an integrated series and gives them a meaningful context.

> There must be now-occurring events, to which meanings are assigned in terms of a story taking place. Episodes do not mean what they would mean if occurring in some different story. They have to be perceived in terms of the story, as its fowardings and fulfillings. (Dewey, 1929, p. 307)

In contrast to idealistic perspectives that view "consciousness as a power which modifies events," for Dewey, "[c]onsciousness *is* the meaning of events in the course of remaking" (Dewey, 1929, pp. 307–308). Consciousness does not *cause* the difference between old and new meanings. Rather, it "is that phase of a system of meanings which at a given time is undergoing re-direction, transitive transformation" and which has the effect of changing the direction of activity (Dewey, 1929, p. 308).

The immediately precarious, the point of greatest immediate need, defines the apex of consciousness, its intense or focal mode. And this is the point of re-direction, of re-adaptation, re-organisation. Hence the aptness of James's comparison of the course of consciousness to a stream…its movements as a series of perchings and flights, of transitive phases; for meanings are condensed at the focus of imminent re-direction only to disappear as organization is effected, and yield place to another point of stress and weakness. (Dewey, 1929, pp. 311–312)

Furthermore, for Dewey, consciousness, as the *process* of the re-making of meanings, is independent from the *objects* of consciousness. That is, the process is independent of the actual meaning objects being re-made. Consequently, there is no substantive qualitative difference between the consciousness of *real* physical objects, conceptual abstract objects, emotions, thinking, remembering and imagination. All consciousness is essentially the same—it is only the nature of the object of consciousness that is different. "[E]very mode of awareness…in its immediate existence is exactly the same sort of thing, namely a remaking of meanings of events" (Dewey, 1929, p. 318). In other words, even though there might be a difference in the belief or knowledge value of different meanings, the process of the coming into new meanings is the same. For example, it is possible to hold speculative propositions in our imagination as a part of a functional process of inquiry but "[k]nowing, believing, involves something additive and extrinsic to having a meaning"—it depends on the consequences and the histories of the meanings of objects (Dewey, 1929, p. 322).

From Dewey's organic evolutionary perspective, the functional purpose of consciousness is as a way to deal with uncertain or problematic situations encountered in the natural world. It is a way for human organisms to cope and adapt their orientation within indeterminate situations. In other words, consciousness arises precisely because of the precarious and perilous character of the natural environment. It is a dynamic process of *making sense* of dynamically unfolding situations, that allows us to adapt, adjust, attune and cope with our precarious and changing world. As such, consciousness is a wholly naturally arising organic process of reorientating ourselves to unstable and shifting environments (Dewey, 1929).

In its movement [consciousness] is, therefore, conditioning of what is to come; it presents the potentiality of foresight and prediction. The union of past and future with the present manifest in every awareness of meanings is a mystery only when consciousness is gratuitously divided from nature, and when nature is denied

temporal and historic quality. When consciousness is connected with nature, the mystery becomes a luminous revelation of the operative interpenetration in nature of the efficient and the fulfilling. (Dewey, 1929, p. 353)

Dewey's theory of consciousness has a number of implications for learning, as well as what it means *to know*. For Dewey, consciousness refers specifically to the conscious awareness of meanings in minded human organisms—in contrast to the mere *sensitivities* or *feelings* of non-human organisms. However, awareness of meanings is not static. Rather, it is the process of transformation and reorientation, in which the intentional focus moves to the point of rupture or stress in the habitual field of meanings. In addition, *mind* is also not something distinct or separate from the body. Rather, they form the integrated whole *body-mind.* The body-mind, in turn, can be understood as complex set of deeply intertwined embodied and mental habits that form a general background field of conscious and nonconscious meanings. *Learning*, then, on the Deweyan view, as the transformation of body-mind habits, can also be either conscious or nonconscious. In other words, learning not only happens at the level of conscious awareness, involving reflective thought. It also happens at the subconscious level, involving the adjustment and attunement of the body-mind within different situations. However, rather than there necessarily being a clear distinction between *sensitivities* and *feelings*, and *consciousness*, it might be more useful to think of these as forming a *sensitivity-feeling-sentience-consciousness* continuum. In *minded* human organisms, these are all present to some degree. Conversely, for non-human organisms, the habitual *knowing*—that is present, for example, in sentient animal behavior, plant intelligences and even cellular and neuronal functioning—could possibly be considered to be rudimentary forms of awareness of meanings. In other words, meanings do not necessarily need to be associated with language and socioculture but perhaps might be better seen as being *in* the underlying habitual organic structures.

For Dewey, consciousness—as the process of reflective thought—arises in uncertain situations that do not make sense in relation to the existing set of body-mind habits. In other words, it arises when there is a rupture or disjunction in the fabric of the background field of body-mind habits. The implication for learning situations, then, is that they need to contain at least some uncertainty for the participating learners. However, learning—as the general process of formation and reformation of body-mind habits—is not only a response to uncertainty. It is also dependent on prior understandings and meanings—as body-mind habits. In other words, coming to new

and/or deeper understandings is co-determined by both previous understandings and current situated non-understanding. In relation to designing learning situations—particularly agile learning situations—there are number of issues. Firstly, the nature and magnitude of any disjunction or uncertainty needs to consider the learners' prior understanding. Secondly, consideration needs to be given for the variances in the prior understandings of individual learners within the learning situation. Thirdly, the aptitudes of individual learners and how these effect their ability to make sense of the uncertainty needs to be considered. Fourthly, the affective states of individual learners—both those that they bring with them *to* the learning situation and those that are co-determined *by* the learning situation—needs to be taken into consideration. The implication for learning situations—in relation to individual learners—is that they do not necessarily fit neatly within scheduled spatiotemporal frames, but are extensive in both time and place. In other words, learning does not necessarily happen in the scheduled class-time situation. Rather, it can happen anywhere, at any time, and is co-determined by a wide range of different conditions and situations over which teachers and learners at best have only *weak* control.

A Theory of Knowing

In order to gain a deeper understanding of *learning* from a Deweyan perspective, I now turn to the question of *knowledge* and, in particular, what it means *to know*. Rather than knowledge being conceived as a fixed representation *in* the mind *of* an external reality, for Dewey it is a dynamic, fluid, *knowing* body-mind activity. As such, *knowing* is always situated and necessarily co-constituted by the habituated and enculturated body-mind in dynamical transaction with its sociocultural-material environment. It is "a natural, generative mode of situated experience" (Fesmire, 2015, p. 93). The complex set of body-mind habits do not by themselves constitute knowing, as such. Rather, they represent the potential for knowing activity—as predispositions to act within different situations. It is only when in dynamical transaction with a particular sociocultural-material environment that the body-mind *knows*—and then only if the activity results in the desired or intended consequences. "Take me out of the situation and what do I know?" (Schön, 1992, p. 124). Nor does consciousness or reflective thought by itself constitute knowing. It is only when the resulting speculative propositions or theories are shown to work in practice that they can be asserted as *warranted*—and then only for that particular situation. However, resulting concepts and ideas—as new intellectual habits—are able to be used as

resources or tools for resolving future similar or related uncertain situations. As such, they are always open to reassessment and improvement in the light of new evidence and in different situations (Biesta & Burbules, 2003; Miettinen, 2000).

> Because 'knowledge' and related issues must answer to correct understandings of learning, pragmatism departs widely from speculative philosophizing by effectively discarding 'knowledge', dismembering 'consciousness', and differentiating 'reason'… There is, for pragmatism, no singular thing as 'knowledge'… Knowings occur naturally, as everything organic and human does, but there needn't be a core commonality to all of them…Good inquiries display general patterns, but nothing methodologically 'essential' characterizes all learnings from inquiry. (Shook, 2013, p. 577)

From the pragmatist perspective, knowing is primarily concerned with the meaning of experienced things, rather than the grasping of an external reality. As such, it imbues situations and things with meaning through creating possibilities for intervening intelligently in the situation. Objects and things, both material and conceptual (including language) are seen primarily as tools or instruments. As such, their meaning is in their practical use in action to achieve a particular consequence, or end-in-view (Fesmire, 2015; Biesta & Burbules, 2003; Dewey, 1929). However, Dewey's theory of knowing—which he regarded as the central tenet of pragmatism (Shusterman, 2014)—cannot necessarily be considered an epistemology, in the traditional philosophical sense of the term. Rather than posing a theory of how separate minds come to know the external world, Dewey dissolves knowing *into* the world as a natural organic process. As knowers, "we are always immediately in the mix with objects as active, engaged, and creative participants in what is known" (Fesmire, 2015, p. 92). The main focus for Dewey, then, is *how* things are experienced as known things (Fresmire, 2015, p. 86). In this way, Biesta & Burbules (2003) suggest that pragmatism might be better thought of as an *anti-epistemology*. However, I propose that as a mode of natural existential experience, Dewey's theory of knowing is more accurately characterized as an *onto-epistemology*—as a type of situated *knowing-in-becoming* that dissolves the traditional boundary between epistemology and ontology.

> Dewey often preferred to use the gerund "knowing" in place of the substantive "knowledge". Knowing is a trans-action. We must get over the notion that there is a divide between epistemology (knowing) and ontology (objects and things). We must overcome the "spectator stance" and realize the only access we have to reality is through our practical, *active* participation in it…we are finite inquirers in an infinitely complex universe wherein there is always more than we can recognize…there are no sharp boundaries, no simple "in or out," in holistic functionalism. (Garrison, 2001, p. 289)

Dewey's theories of dynamic emergent *knowing* and *learning* stand in stark contrast to the epistemological beliefs and pedagogical approaches embedded in traditional educational institutions. On the traditional view, *knowledge* is seen as something that can be quantified, commodified and transferred from the expert teacher to the learner. As such, *learning* is regarded as the acquisition of knowledge that can somehow be reduced to predefined *learning outcomes*, quantified and measured. However, from a Deweyan perspective, there can be no fixed predetermined learning outcomes—or even such a thing as *knowledge* that can be acquired, yet alone quantified and measured. Rather, body-mind knowing is always situated within dynamically unfolding situations, in which both the knowing activity, and the co-constituting body-mind habits, are continually under review—being dynamically formed and reformed. In relation to the learning and knowing of domain practices, these cannot be simply acquired, then known and applied in domain practice situations. Rather, they are continually being formed and reformed within domain practice situations. In other words, they are learned *through* practice. Even at the level of collective sociocultural practices, these cannot be considered as fixed and stable domain knowledge. They too are in a constant state of dynamic flux, emerging from the complex dynamical intersubjective transactions between domain practitioners. In this way, domain *knowledge*, as collective intersubjective *knowing*, is literally *in* the domain of practice *as* a collective activity. As teachers and learners are also domain practitioners, their shared activities still constitute domain knowing. Teachers and institutions may not necessarily be the exclusive guardians, or gate-keepers, of domain *knowledge*, but they are participants in the domain *knowing*.

Experimental Learning and Inquiry

As an adaptive process of reorientation and reorganization of body-mind meanings, in response to uncertain and unfamiliar situations, learning is necessarily *experimental*. However, being experimental does not mean that it proceeds in the form of blind trial and error. Rather, experimental learning always involves some level of prior understanding, in the form of body-mind habits developed in previous situations. In other words, it is an *intelligent*—though not necessarily conscious—experimentation that involves integrated experiential modes of overt action and thinking. This notion of learning—as intelligent experimentation—forms the basis of Dewey's *theory of inquiry*. When the body-mind organism is in knowing transaction with their environment, and

the situation is unfolding in a predictable and familiar way, the situation is said to be *determinate*. In other words, the situation makes sense, in relation to the existing body-mind habits developed in similar previous situations. In these determinate situations there is an integrated non-reflexive, or pre-reflexive, transactional flow between the knowing body-mind subject and the objects and things of the environment (Fesmire, 2015; Biesta & Burbules, 2003; Miettinen, 2000; Dewey, 2013/1910, 1929).

However, when the body-mind subject encounters an uncertain or *indeterminate* situation—in which their established habits do not work—there is a rupture in the field of body-mind meanings and a disjunction in the flow of knowing transaction. For the subject, the situation no longer makes sense and they are unsure what to do. As such, the situation becomes *problematic*. Initially, however, the indeterminate situation might not be consciously experienced as a problematic situation. Rather, it might be felt in the body as a tension or emotion. Reflective thought, or consciousness—as the functional process of mind reorientating itself—arises in order to make sense of and understand the problematic situation and reestablish knowing activity. Importantly, thinking is not considered to be a separate thing from action. Rather, both are regarded as deeply intertwined modes of whole body-mind experience. Similarly, for Dewey, there is no separation between thinking and practice. In fact, thinking *is* a practice. It is an activity, a process, something we do. In thinking, however, we transact with conceptual objects, in their meanings, regardless of whether or not they have any reference to physically existing objects (Fesmire, 2015; Biesta & Burbules, 2003; Miettinen, 2000; Dewey, 2013/1910, 1929).

In the process of reflective thinking, attentional/intentional focus moves to the conditions of the uncertain situation which are most urgent and immanent. Through this, the situation becomes problematized—there is now an awareness of the situation as being problematic, rather than merely indeterminate. In reflective thought, suggestions for possible solutions are formulated and held in imagination as tentative hypotheses, or speculative propositions. However, this is not necessarily a consciously rational process, involving inductive and deductive reasoning. Rather, tentative solutions spring to mind as speculative suggestions from the deep field of habituated body-mind meanings—determined by past experiences. This type of "guessing instinct," distinct from inductive and deductive reasoning, is what Peirce referred to as *abductive* reasoning (Paavola, 2015, p. 232). Propositions are further

refined through integrated dynamical thought processes and experiments involving memory, imagination, reasoning, emotion and desire. Potential courses of action are initially tried out in imagination as thought experiments, or dramatic rehearsals, in which we project ourselves forward to the possible future consequences of our propositions (Paavola, 2015; Biesta & Burbules, 2003; Miettinen, 2000; Dewey, 2013/1910, 1929).

Ultimately, however, speculative solutions need to be tested out in application to see if they work. If they do, then the problematic situation is resolved and the integrated knowing transactional flow with the environment is restored—even if only partially or momentarily. As a result, existing habits are adjusted and reformulated, including new meanings and concepts, as intellectual habits. This is how minded human organisms continually learn and dynamically transform their habits. Through this, the world becomes increasing differentiated and meaningful (Fesmire, 2015; Biesta & Burbules, 2003; Miettinen, 2000). On the other hand, if the speculative proposition does not work, or only partially works, something has still been learned about the situation by using the proposition to experimentally explore the problem. This has particular relevance for design practice in which propositional solutions can be used to explore messy, ill-defined problematic situations.
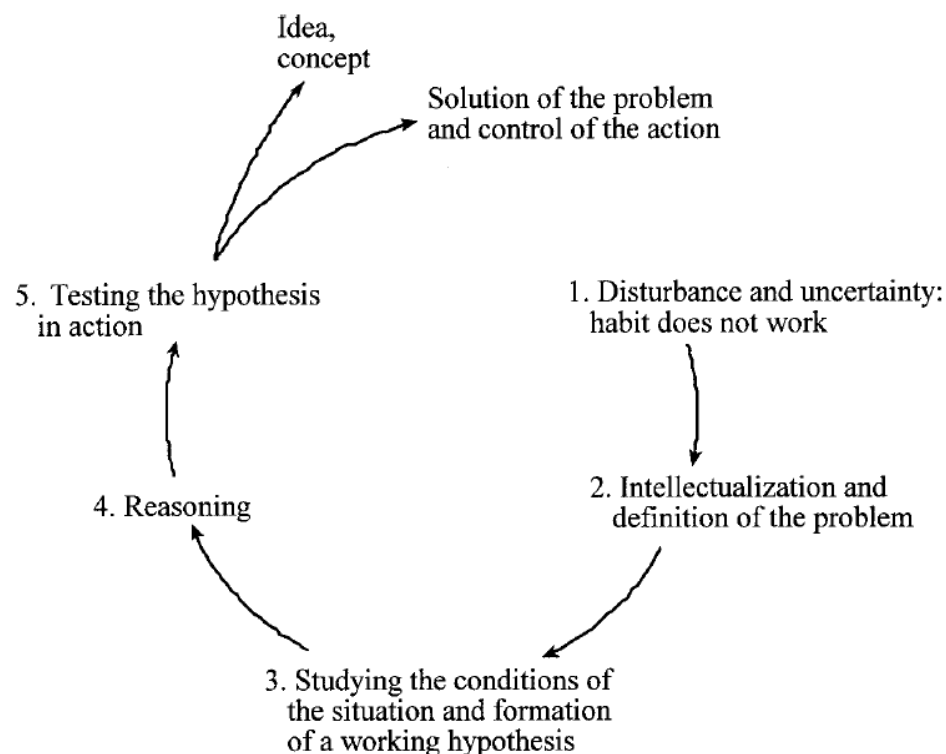
Figure 3. Dewey's process of experimental learning and inquiry, as a cycle of reflective thought and action. Adapted from "The Concept of Experiential Learning and John Dewey's Theory of Reflective Thought and Action," by R. Miettinen, 2000, *International Journal of Lifelong Education, 19*(1)*,* p. 65.

Dewey's theory of inquiry can be seen as a general pattern of learning involving integrated processes of thinking and action—as modes of experience. It can apply equally to both longer timeframe *research* inquiries—involving a community of inquirers—as well as to shorter timescale experimental learning through practical doing. It is the process by which human body-mind subjects (re)orientate themselves within uncertain situations in order make sense of them and learn. It has particular relevance for the rapidly changing and uncertain contemporary world—especially for creative technologies domains. Importantly, it provides us with a conceptual framework for emergent learning that can move us beyond the notion of learning as the acquisition of a fixed curriculum.

> Dewey's future-oriented and experimental concept of learning serves as a comprehensive and contemporary theory of learning that emphasises creativity and innovation. This leads to a greater need to educate for inquiry, for critical and reflective thinking into the uncertainties and the challenges of living in a global society with its constant demand of responsiveness to change. This means we must learn to live rather than to acquire a fixed curriculum. (Elkjaer, 2009, p. 88)

Summary / Conclusion

Dewey's philosophical project can be seen primarily as an anti-metaphysical reconstruction of Western philosophy. He rejects traditional mind-world dualism in favour of a naturalistic empirical monism that is grounded in existential experience. However, for Dewey, *experience* is not something that is strictly *in* the mind, and of a separate external world. Rather, he reconceives the notion of experience in naturalistic terms as the dynamical transaction between an organism and their environment. In this way, the subject and the object are dissolved within whole experience. For human organisms—with *mind* and *culture*—the environment is both sociocultural and material. Taken together, the organism and the environment form the *situation*—which dynamically unfolds through time in both predictable and unpredictable ways. However, experience, being both spatially and temporally situated, is not merely a series of unconnected discrete experiences. Rather, it forms a continuum—with

previous experiences living on in future experiences through *habits*. However, habits are not fixed rigid structures or routine patterns of behavior. Rather, they undergo continual formation and reformation—through encountering, and making sense of, unfamiliar and uncertain situations. It is this ongoing organic-life process—of formation, reformation, transformation, adaptation, adjustment and attunement of body-mind habits—that constitutes *learning*.

Mind, for Dewey, is the broad and deep, background field of *meanings* that emerge in human organisms through communication and language. As with experience, mind is both subjective and objective. As subjectivities, individual minds are part of integrated whole *body-minds* and are initiating agents of change—with their own histories and (bodily and mental) habits. In their objective aspect, individual minds are integral parts of shared sociocultural worlds that provide the framework in which they are orientated by and feel *at home* in. *Consciousness*, or *thinking*, with its attentional/intentional focus on differentiated meanings, emerges from the background field of mind. It is the functional organic process of the reorganizing and reorientating of mind when existing meanings do not make sense. The important thing for Dewey is that mind and consciousness are not separate from nature, existing in a separate and mysterious metaphysical realm. Rather, they are naturally occurring functions of naturally occurring organisms—that have reached a certain level of sociocultural complexity.

For Dewey, *knowledge* is not a separate definable thing. Rather, *knowing* is a mode of experience in which the body-mind transacts *knowingly* with the meanings of both physical and conceptual objects. As such, knowing is always situated—co-constituted by the habituated, enculturated subject and their sociocultural-material environment. However, knowing is not necessarily conscious, as many of our habituated activities happen without our conscious awareness—such as walking or riding a bike. As a situated mode of lived transactional experience, rather than Dewey's *theory of knowing* being an epistemology, it can be characterized as an *onto-epistemology* of *transacting-in-the-world*. *Learning*, then, is not seen as the acquisition of knowledge— as in traditional education approaches. Rather, it is understood as the formation and reformation of complex sets of body-mind habits *through* multi-modal experience involving integrated thinking, doing and feeling. This process of situated, experiential, experimental learning and inquiry has particular relevance for nomadic agile learning *through* practice. Practices, as complex sets of body-mind habits, are formed and reformed *in* practice—involving multiple continuously occurring transactions and

modes of experience over multiple timescales. As with experience and knowing, then, learning is also situated, sociocultural, transactional, dynamical and open-ended.

In relation to our central theme of *dissolving the walls*, Deweyan pragmatism not only dissolves the boundaries between mind and world, mind and body, theory and practice, thinking and action, 'development from within' and 'formation from without', and individual knowing and collective bodies of knowledge. It also points to ways of dissolving the walls between learning activities and work activities within learning-practice situations. From the perspective of the individual learners, their learning journeys might be seen as unfolding experiential continuums through multiple learning-practice situations—the outcomes of which are the result of adventures that cannot be known or defined in advance. Dewey's notion of open participatory communication offers us a way of conceiving both the cohort of learners and the learning-practice situations themselves as social environments, in which learner-practitioners learn together through their shared practice(s).

I will end this chapter with some final comments about the breadth of Dewey's philosophical theories and how he viewed the role, or purpose, of philosophy. For Dewey, philosophical inquiry, as with all inquiry, necessarily begins and ends in lived worldly experience. Specifically, he saw the role of philosophical inquiry as one of high-level criticism of culture—in all its aspects. As such, philosophy can be seen as a critiquing and connecting all the various strands and divisions of separate *discipline knowledge*. Philosophy differs from science, in that it is not concerned, as such, with truth propositions about the natural world. Rather, its main concerns are with meanings and values—in all their various instrumental, social, aesthetic and ethical modes. Philosophy cannot provide any propositional truths. Rather, it seeks deeper and more nuanced meanings through critical inquiry, that are always in dissolution and reconstruction in the light of new evidence and understandings (Dewey, 1929; Biesta & Burbules, 2003). Consequently, Deweyan pragmatism itself is also always open to revaluation and reconstruction—requiring an openness to other perspectives and new scientific findings (Garrison, 1999; Biesta, 2013). Following Donald Schön's call, then, to "beware of accepting [Dewey's theory of inquiry] precisely as he left it to us" (Schön, 1992, p. 122), and Biesta's (2013, p. 41) suggestion for a *deconstructive pragmatism* that "acknowledges the fact that it is always in deconstruction," I will now turn in *Chapter 3* to some of the shortcomings and gaps in Deweyan pragmatism, and how these might be informed by other related and relevant perspectives.

Chapter 3

Comparative Discussion of Other Related and Relevant Perspectives

For Deweyan pragmatism, theoretical concepts and knowledge are always open to review and reconstruction in the light of new evidence and understandings. Consequently, Dewey's pragmatist theories, themselves, are also always open to revaluation and reconstruction, that calls for an openness to other perspectives. In this chapter, then, I will look at some of the gaps, issues and shortcomings of Deweyan pragmatism—and how more recent philosophical, psychological and cognitive science perspectives might be able to complement and supplement the pragmatist onto-epistemology. The aim of these discussions is not so much to focus on the differences between the various perspectives, but rather to look at how the walls between them might be dissolved in order to gain to a deeper and more nuanced understanding of *being*, *knowing* and *learning*. The perspectives include Donald Schön's *reflective practice*, Lev Vygotsky's *activity theory*, the *phenomenological* perspectives of Edmund Husserl, Martin Heidegger, Hans-Georg Gadamer and Maurice Merleau-Ponty, the *enactivist* perspective of Shaun Gallagher, Karen Barad's *agential realism* and Jacques Derrida's *deconstruction*.

In addition to Dewey having a deep understanding of the genealogy of Western philosophy, he also kept abreast of the latest scientific theories—including quantum physics. However, in his rejection of Western philosophy—on both sides of the dualistic divide—he mostly refers to other perspectives in general terms, rather than attributing them to particular philosophers. As such, it is not always apparent to which particular philosophers and philosophies he is referring. Nonetheless, he rejected equally both objectivist and subjectivist positions—both historically and contemporaneously (Dewey, 1929). In relation to other contemporary philosophers— other than the pragmatists—it is also not apparent to what extent Dewey was aware,

or what he thought, of them. Although pragmatism was considered by many continental philosophers—if considered at all—as being a parochial American philosophy, *all* the classical pragmatists had a strong grounding in European philosophy—especially Kant and Hegel (Fesmire, 2015; Bernstein, 2010).

Nietzsche—who was developing analogous ideas at the same time as Peirce and James—also took a similar anti-metaphysical and anti-transcendental perspective to pragmatism. However, Dewey and Mead, in particular, take a quite different view of individual selves—seeing them as sociocultural constructions. This contrasts with the strong self-determining agency of Nietzsche's *übermenschen*, exercising their *will to power* (Garrison, 2017; Nietzsche, 1885/2003). Dewey also does not appear to have anything specific to say about Husserl's phenomenology, as such. Although they share a similar focus on lived experience, as the starting point of philosophical inquiry, their notions of what constitutes experience are quite different (Garrison & Shargel, 1988). Husserl situates his transcendental phenomenology clearly on the subjective side of the mind-world divide—with his notion of antecedent mind being *meaning giving* (Van Manen, 2014; Garrison & Shargel, 1988). This contrasts with Dewey's understanding of mind *as* meaning, or rather, a field of meanings. Dewey explicitly rejects all philosophies that place mind, meaning and consciousness in a mysterious transcendental realm, separate from nature (Fesmire, 2015; Dewey, 1929, 1938a).

Notwithstanding the anti-Cartesian similarities between pragmatism and the philosophies of Heidegger and Wittgenstein (Bernstein, 2010; Rorty, 1982), according to Bernstein (2010), neither had any serious understanding of American pragmatism.

> It is striking how [Heidegger and Wittgenstein] (and others influenced by them) came to share many of the same insights of the pragmatists in what Heidegger calls our "being-in-the-world" and Wittgenstein calls "forms of life". (Bernstein, 2010, p. x)

Richard Rorty's *neopragmatist* project can be seen as an attempt to open up a dialogue between pragmatism and the philosophies of Wittgenstein, Heidegger, Gadamer, Derrida, Foucault, Lyotard and Habermas—all of which had an influence on his own language-orientated form of pragmatism (Bernstein, 2010; Rorty, 1982). However, as Chin (2016) points out, there are some inherent problems in relation to "how we engage frameworks with very different vocabularies, questions and priorities in common conversation" (pp. 205–206). Rorty approached this problem through his

conception of language and vocabularies as social practices—rather than as essential foundations. On Rorty's view, language is a collective activity that people engage in for particular purposes. As with Dewey, vocabularies are *tools* for shared purposeful activity, rather than representing any correspondence with an external reality (Chin, 2016). Following Rorty, then, my approach to these discussions is not to treat the different perspectives and vocabularies as rigid dogmatic positions. Rather, they are seen as merely different interpretive perspectives on the same lived human experience—which they are all somehow trying to make sense of. The question, then, is not whether they are right or wrong—or whether my understandings are correct or incorrect. Rather, it is whether they are able to contribute to a better shared understanding of our worldly human experience, for the purpose of establishing a suitable onto-epistemological frame for agile learning. In this way, the discussions in this chapter should be seen primarily as a dissolving of the walls between different (albeit similar) perspectives.

I will begin with Donald Schön's notion of *reflective practice* (Schön, 1992) in which he applies Dewey's theory of inquiry to concrete design practice and design education situations. Specifically, Schön's concepts of *knowing-in-action* and *reflection-in-action* address the present-moment adjustments and attunements made *in* practice situations. This will be followed by *activity theory* (Engeström, 2001; Miettinen, 2006; Vygotsky, 1978), which for Miettinen (2006), is a similar action-orientated theory of transformative material activity to pragmatism. Next, I will discuss a number of different strands of *phenomenology* including Edmund Husserl's *transcendental* phenomenology (Zahavi, 2019; Van Manen, 2014; Garrison & Shargel, 1988), Martin Heidegger's *existential* phenomenology (Hodge, 2015; Baert, 2009; Heidegger, 1927/2008; Rorty, 1976), Hans-Georg Gadamer's *hermeneutic* phenomenology (Van Manen, 2014; Gadamer, 2013; Baert, 2009) and Maurice Merleau-Ponty's phenomenology of *embodied perception* (Gallagher, 2017; Fuchs, 2016; Van Manen, 2014; Thompson, 2007; Varela et al., 1991). This then leads to a discussion on *enactivism*, a contemporary *philosophy of nature* (Gallagher, 2017; Hutto & Myin, 2017; Thompson, 2007; Varela et al., 1991) that has its philosophical roots in phenomenology—but that also draws on evolutionary biology, Buddhist psychology and cognitive neuroscience (Varela et al, 1991). Enactivism shares an action-orientated and embodied understanding of cognition with pragmatism, and is able to offer important insights from contemporary cognitive science that support dynamical embodied and situated notions of knowing (Dreon, 2019; Gallagher, 2017). This is

followed by a brief look at Karen Barad's *agential realism* (Barad 1996; Rosiek, 2013) which proposes a similar onto-epistemology of *material-cultural intra-actions*. Finally, I will discuss Jacques Derrida's *deconstruction* of metaphysics—in relation to Dewey's own rejection of metaphysics and subsequent reconstruction of philosophy (Biesta, 2013; Garrison, 1999).

Reflective Practice

Donald Schön's notion of *reflective practice* (Schön, 1992) can be seen primarily as a reworking, or reinterpretation, of Dewey's theory of inquiry—but situated within the context of design practice. Having originally based his doctoral thesis on Dewey's *Logic: Theory of Inquiry* (1938b), Schön later reworked his thesis as *The Reflective Practitioner,* after studying professional designers in practice for thirty years. Through his observation and interpretation of professional practice, Schön identified two main issues with Dewey's theory of inquiry. Firstly, he felt that in generalizing the processes of inquiry involved in the natural sciences to include everyday commonsense inquiry— as involved in professional practice—Dewey does not differentiate between the two types of situation, and the types of methods and rigor involved in each. Secondly, Schön claims that Dewey does not sufficiently allow for the differences in how we interpret situations as being *problematic* or not (Schön, 1992).

Schön's reflective practice uses the central metaphor of design practice (i.e., designing) as "a reflective conversation with the materials of a situation" (Schön, 1992, p. 123) and applies Dewey's theory of inquiry—as a process of integrated thought and action—at two distinct levels. The first level, equating to the living present, involves the integrated *in-the-moment* flow of action and reflection, which Schön refers to as *knowing-in-action* and *reflection-in-action*. The second level involves a longer timeframe, in which design practitioners reflect *on* their practice of integrated knowing-in-action and reflection-in-action. "By *knowing-in-action* I mean the knowing built into and revealed by our performance of everyday routines of action" (Schön, 1992, p. 124). For Schön, knowing-in-action is displayed in activities such as walking or riding a bike—but can also apply to performing routine mental functions such as working out familiar maths problems, or coding. In this way it might be equated with intuition or instinct. However, for Schön, the *knowing* is not only in the action, but also in the objects that we are in conversation with.

> It is through our commerce with the familiar objects that we gain access to what we know…I must put myself, actually or virtually, into the situations where the routine can be executed. Take me out of the situation and what do I know? (Schön, 1992, p. 124)

Reflection-in-action is the momentary and fleeting reflection that "takes place in the midst of action, in what I call the action-present, and it need not employ the medium of words" (Schön, 1992, p. 125). It is the smooth, on-the-spot, experimental response to momentary surprise, uncertainty or puzzlement—in the flow of knowing-in-action—and is central to the artistry of practice.

> It is an ephemeral episode of inquiry that arises momentarily in the midst of a flow of action and then disappears, giving way to some new event, leaving in its wake, perhaps, a more stable view of the situation. We tend to "wipe it out" as soon as it is over, like the error one makes and quickly forgets on the way to discovering the solution to a puzzle. (Schön, 1992, p. 125)

However, from my reading of Schön and Dewey, Schön perhaps misinterprets (albeit subtly) Dewey's notions of transactional experience and experimental inquiry. Dewey's theory of inquiry *is* able to account for all forms of inquiry and learning—including scientific and academic inquiry, and commonsense (design) inquiry—over different timeframes. These potentially range from subconscious knowing (as body-mind doings), through the living action-present, to more complex inquiries over longer narrative timescales. For Dewey, *knowing* is not something that is so much *in* action— rather, it *is* an action, as a mode of transactional experience. The same can be said of *reflection*. It is not something that is *in* action—it *is* an action. It is the process of reorientation of the field of body-mind habits, even if only momentary, in response to a disjunction in the flow of knowing action. However, Schön is right to draw attention to the different timescales over which the processes of inquiry can take place— especially in relation to practice. His notions of knowing-in-action and reflection-in-action are valuable conceptual tools for differentiating between more immediate momentary adjustments and attunements, and processes of inquiry over longer timescales. However, in keeping with Dewey's notion of experience, it is possible to reformulate Schön's *knowing-in-action* and *reflection-in-action* as *knowing-as-action* and *reflection-as-action*. Practical knowing activity and thinking activity are simply different modes of experience that together form integrated whole practice.

Drawing on Dewey's notion of the situation—as the subject and the environment taken together in transaction—Schön (1992) describes the back and forth process of designing as a *conversation* with the situation.

> The term conversation with the situation refers to a type of reflection-in-action understood from Dewey's transactional perspective. Here, an inquirer, in transaction with the materials of the situation, encounters a surprise in the form of "back-talk" that momentarily interrupts action, evoking uncertainty. The inquirer goes on to transform the situation in a way that resolves uncertainty, at least for the moment…The inquirer is in the situation, influenced by his appreciation of it at the same time that he shapes it by his thinking and doing. (Schön, 1992, p. 125)

Again, notwithstanding the usefulness of the conversation metaphor as a way of describing the practice of designing, Schön seems to be conflating the environment with the situation. For Dewey, the situation refers to the subject and environment taken together. The conversation cannot be with both the materials—as discriminated parts of the environment—*and* the situation, because the environment is *in* the situation. Schön's notion of the conversation actually equates to the transaction between the practitioner and their tools and materials. In other words, their conversation *is* their experience. The conversation is not *with* the situation, but rather *in* the situation. The conversation is situated practice, in which the practitioner modifies their environment, and which in turn, modifies the practitioner.

All of these Schönean notions—knowing-in-action, reflection-in-action and conversation with the situation—take place within what Schön (1992) calls the "action-present" (p. 125). However, when they are in turn reflected on—within longer timescale processes of inquiry—"thought is turned back on itself, either on the knowing-in-action revealed by a pattern of behaviour or on the reflection-in-action that reshapes understanding in the midst of action" (Schön, 1992, p. 126). For Schön, this is an essential part of *reflective practice*—as a retrospective making sense of the fleeting and transitional understandings formed spontaneously in the action-present. According to Schön, reflective practice is essential for all forms of criticism, teaching and learning that involve making the tacit explicit—so that it can be described and communicated. As such, reflective practice involves "an art of description distinct from the art that may be involved in the action described" (Schön, 1992, p. 126). This higher-level reflection is part of a further *reflective* conversation with the situation—as a form of "Deweyan inquiry, mediated by conscious reflection on the situation and, at the same time, on one's way of thinking and acting on it" (Schön, 1992, p. 126).

Essentially, Schön is trying to make a distinction here between the nature of *in-the-moment* action and reflection, and longer timescale action and reflection (as in reflective inquiry). He does this primarily for the purpose of trying to understand the different types and modes of action-thinking processes that occur in the concrete practice of designing. The main difference is in the nature of the intentional object of the thinking. In the action-present, the objects of thought are the immediately had (or felt) meanings of existential material objects, while in the longer-timescale reflection, they are primarily conceptual objects—held in solution as speculative propositions.

However, from a strict Deweyan perspective, rather than there being two distinct levels, practice involves multiple intertwined processes of action-thinking happening concurrently over a range of different timescales. Furthermore, many of these processes happen at the subconscious, or subpersonal, level, of which we are not aware. As such, they appear to us to be happening automatically, or intuitively, in an uninterrupted knowing transactional flow. This discussion of Schön's (design) practice theories, however, does highlight a particular issue for Dewey's generalized theory of inquiry, and that is how it works in practice, in particular concrete situations. As such, Schön's study of the reflective practices of actual practitioners makes a valuable contribution to a deeper and more nuanced understanding of the different modes of thinking and doing involved in professional practice. However, one way of perhaps better understanding these different modes might be to follow Gallagher (2017) in appealing to Varela's differentiated timescales. Varela's timescales provide an account of how subconscious, embodied cognitive processes, at the cellular and neuronal level, integrate and emerge as intuitive knowing in the living present, and then scale up to more complex reflective practices over longer *narrative* timescales. I will return to Varela's timescales in more detail later in the section on enactivism.

The implication for agile learning is that *practice* and *practice situations* cannot necessarily be reduced to two neat levels of *thinking-action* processes of inquiry. Rather, they need to be thought of as complex dynamical systems, involving multiple intertwined *thinking-action* processes, over a continuum of timescales. Nor can practice, as multi-modal transactional experience, be reduced to just thinking and overt action modes. As practice involves integrated, subconscious body-mind processes, it also includes affective and aesthetic modes of experience. In fact, for Dewey, it is the *felt* aesthetic quality of experience that is primary—rather than action or thinking. It is the emotional orientation of the body that provides the impetus, or

impulse, for action and thinking, and which itself also has a felt aesthetic quality (Johnson, 2007). Schön also does not adequately account for transactions with other people in his conversational account of practice. Not only does practice involve a metaphorical conversation with the material environment, but also *actual* conversations with other people—within the integrated sociocultural-material situation. Learning situations, then, as practice situations, need to consider *all* modes of experience operating over a continuum of timescales as a unified whole. In other words, the walls between different experiential modes and discrete timescales need to be dissolved.

Cultural-Historical Activity Theory

In this discussion I will refer to *cultural-historical activity theory* simply as *activity theory*. For Miettinen (2006), activity theory—initiated by Russian psychologist Lev Vygotsky in the 1920s—and Deweyan pragmatism share a family resemblance as "epistemologies and theories of transformative material activity" (p. 389). This can be partly explained by their shared Hegelian roots that "provides a commitment to an ontology of change as well as an anthropology of becoming" (p. 391).

> Both [pragmatism and activity theory] regard the concept of transformative practical activity as a theoretical category that makes it possible to solve philosophical dilemmas that emerged from Cartesian subject-object (and mind-body) dualism. For both of the theories, the concept of activity, the prototype of which is work, constitutes a basis for understanding the nature of knowledge and reality. (Miettinen, 2006, p. 389)

With its philosophical roots in Marx's dialectical materialism, Miettinen (2006) regards activity theory as "an heir and a modern version of Marx's materialistic concept of practice" (p. 390). A number of authors, including Bertrand Russell, have noted a strong similarity between Marx's conception of *praxis* and Dewey's *instrumentalism* (Russell, Joas, as cited in Miettinen, 2006). In particular, "(Gavin 1998) finds two important commonalities between [Dewey and Marx]: the dismissal of the idea of subject and object as independent forms of being as well as the social, historical and relational origins of self and individual consciousness" (Miettinen, 2006, p. 390).

The core proposition of Vygotsky's activity theory is that human mind is socially constructed through material activity mediated by cultural artefacts—including tools and language. With a focus on developmental psychology, Vygotsky was primarily interested in how individual mind arises and develops through the mediated use of sociocultural tools and signs (including language) in humans. In other words, how they become enculturated and socialized through their interactions with sociocultural practices and objects.

> During socialization, an individual internalizes, by participating in common activities with other humans, the means of culture: language, theories, technical artifacts as well norms and modes of acting. Thus, consciousness does not exist situated inside the head of the individual but in the interaction between the individual and the objective forms of culture created by the labor of mankind. (Miettinen, 2006, p. 392)

However, the mediated activity, rather than being just a one-way internalization process, also goes the other way, with individual thought and action being externalized in the form of new or transformed cultural artefacts.

> The insertion of cultural artifacts into human actions was revolutionary in that the basic unit of analysis now overcame the split between the Cartesian individual and the untouchable societal structure. The individual could no longer be understood without his or her cultural means; and the society could no longer be understood without the agency of individuals who use and produce artifacts. This meant that objects ceased to be just raw material for the formation of logical operations in the subject as they were for Piaget. Objects became cultural entities and the object-orientedness of action became the key to understanding human psyche. (Engeström, 2001, p. 134)
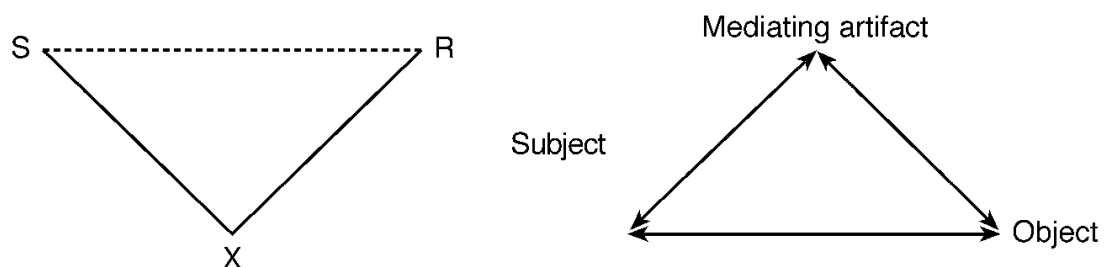
Figure 4. (A) Vygotsky's model of the mediated act and (B) its common reformulation. Adapted from "Expansive Learning at Work: Toward an Activity Theoretical Reconceptualization," by Y. Engeström, 2001, *Journal of Education and Work, 14*(1), p. 134.

In the second generation of activity theory—developed by Vygotsky's colleague Alexei Leont'ev—Vygotsky's individually focused analysis is extended to the study of collective activity *systems*. These involve the complex interrelations between individuals and their communities in shared activity. In the diagram of Leont'ev's activity systems (*Figure 5*), the object is shown as "an oval indicating that object-orientated actions are always, explicitly or implicitly, characterized by ambiguity, surprise, interpretation, sense making, and potential for change" (Engeström, 2001, p. 134).
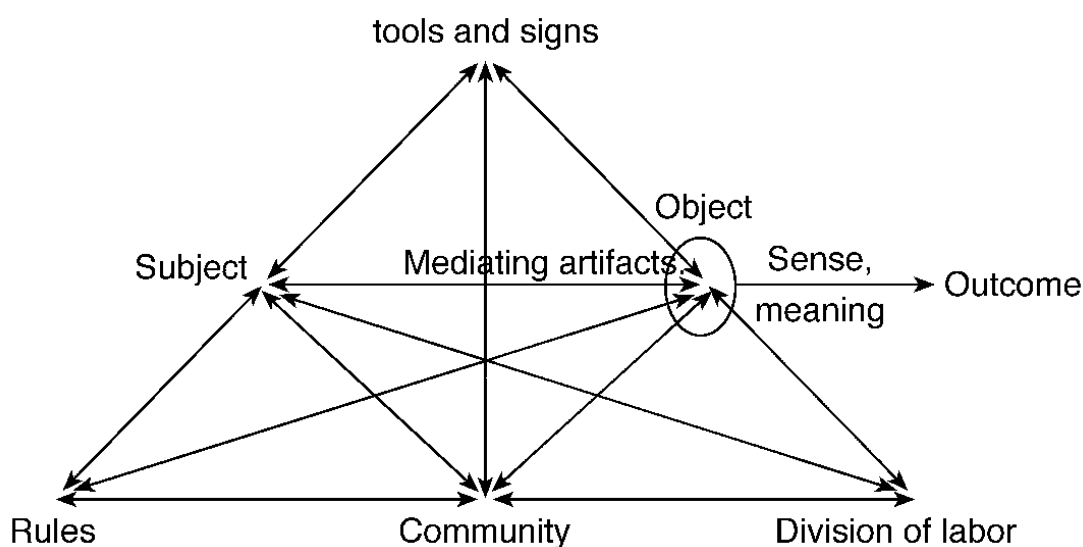
Figure 5. The structure of a human activity system. Adapted from "Expansive Learning at Work: Toward an Activity Theoretical Reconceptualization," by Y. Engeström, 2001, *Journal of Education and Work, 14*(1), p. 134.

As presented so far, there are obvious similarities between activity theory and Deweyan pragmatism, with the main differences being perhaps differences in focus. They both reconceive the relationship between individual minds and culture as one of integrated reciprocity—as a way of dissolving mind-world dualism. Individual minds both emerge from the sociocultural world in activity/transaction, as well as affect sociocultural transformation. However, according to Garrison (2001), there are some fundamental, albeit nuanced, underlying differences in relation to how they conceive the nature of activity. This might have something to do with their different starting points—as well as the use of different language and terms.

Dewey starts from a generalized, naturalistic, monist position, and then sets out to reconstruct Western philosophy from the ground up—based on his transactional

concept of experience (Fesmire, 2015). He reaches further down into nature than Vygotsky to locate the ontological foundation underpinning all experience—including human experience. From this, he develops a far-reaching and comprehensive philosophy of nature. The important characteristic of Deweyan experience—as the transaction between the organism and its environment—is that it is not an interaction, as such, between two separate entities. Rather, it is understood as a deeply intertwined and integrated interplay between two functional parts of a whole situation. In other words, experience is conceived as the functional coordination of the organism and environment. For human organisms, the relationship between individual body-minds and the sociocultures that they are part of takes a similar form. The enculturated body-mind transacts with its sociocultural environment—including intersubjective transactions with other people—as an integral, functional part of the whole sociocultural situation (Garrison, 2001).

Activity theory, on the other hand—situated within the Marxist dialectical materialism tradition—operates primarily within the confines of human culture. As such, Vygotsky's focus is on the way in which individual human minds—including their higher psychological functions—are socially constructed in their activity with cultural artefacts. Cultural artefacts include signs, language, tool use and other people (Miettinen, 2006; Engeström, 2001; Vygotsky, 1978). Even though, in activity theory, all human activity is understood as interactivity—between the human subject and their sociocultural world—there is a fundamental difference between Dewey's notion of functionally coordinated transaction and Vygotsky's concept of mediated interaction. Garrison (2001) argues that for both Vygotsky and Leont'ev, there remains a fundamental dualism between the *internal* individual mind, and the *external* world of sociocultural artefacts. According to Garrison (2001), Vygotsky and Leont'ev appear to hold a 'spectator view' of mind. In the spectator view, mind is understood as internalized structures that represent the separate external sociocultural world—even though they are in interaction.

> What Leont'ev wanted to disclose is the active "process of translation" of external objects into conscious internal images…In constructing his theory of practical activity, [he] struggled to overcome the "spectator view" of reality, as Dewey called it, with a "participant view"; still he was snared in the dialectics of the internal, the external, and their interaction. (Garrison, 2001, p. 276)

This is also illustrated in Vygotsky's (1978) distinction between signs and tools—as different modes of mediated activity—which he saw Dewey as trying to erase. For Vygotsky, tools are *external* material existential objects that are orientated towards other external objects. Signs, on the other hand—including language—are *internally* orientated as "means of internal activity aimed at mastering oneself" (p. 55). While tool use "limitlessly broadens the range of activities within which the new psychological functions may operate," it is the combination of tool and sign use that enables the "*higher* psychological function[s]" (p. 55). In Vygotsky's use of the terms *internal* and *external*, there appears to be an implied dualism which, without an explicitly articulated epistemology, is left unresolved. "Theories of inter-action such as Vygotsky's and Leont'ev's begin with two different entities, environment (situation and context) and organism (actor or agent), and then struggle with the problem of putting them back together via activity" (Garrison, 2001, p. 290).

For Dewey, on the other hand, there is no qualitative difference in the psychological processes involved in transacting with existential *material* objects and conceptual *mental* objects. In the Deweyan view, all thinking (consciousness) is the process of the remaking of meanings (mind). Both material and conceptual objects are always perceived as meanings. Consequently, in their (pragmatic) instrumental meanings, signs and language are just as much tools as material objects (Dewey, 1929). A "tool is a meaning function" and language is "just a very special instance of that function" (Garrison, 2001, p. 284).

> [Every] mode of awareness…in its immediate existence is exactly the same sort of thing, namely a remaking of meaning of events. The difference, it is implied, between awareness of present and "real" things and of absent and unreal is extrinsic, not intrinsic to consciousness. (Dewey, 1929, p. 318)

For Garrison (2001), rather than the implied dualism of activity theory—involving mediated activity between the internal and external—it is *Dewey's* theory of activity, as transactional functional coordination, that is able to provide the better account of the relationship between subjects and objects. Dewey's triadic understanding of transactional functional coordination—involving the agent (subject), the sign and the signified—dissolves the agent and world into an integrated unity by moving "most of the mental act out into the world" (Garrison, 2001, p. 295). Consequently, there is no need to introduce the concept of mediation—as the agent, sign and signified are in functionally integrated coordination.

> In a three-term schema [agent, sign and signified], there is no need to assume that the "external" object is somehow an immanent component (world picture, image, idea, reflection, etc.) of the mind…The internal configuration is merely a part or phase of a three-term transactional functional coordination...Once we begin to think of mental functioning, intentionality, as non-teleological transactional, and functional coordination, we may give up the dualism of inner and outer. Once we do, we may begin to learn how to live creatively in an eventful, durational-extensional, hence distributed, world without withins. (Garrison, 2001, p. 295)

In response to Garrison (2001), however, Miettinen (2001) disputes the characterization of activity theory as being fundamentally dualist. He suggests that Garrison's view is based on a rather narrow reading of Vygotsky's and Leont'ev's psychological texts and does not reference the philosophical works of Ilyenkov and Lektorsky. According to Miettinen (2001), activity theory *is* able to provide useful conceptual and methodological tools for dissolving the dualism, as well as for studying concrete activity systems. In the spirit of openness and emergent transformation—at the core of both activity theory and pragmatism—a number of third-generation activity theorists have sought to open up a fruitful dialogue with pragmatism. In particular, they are exploring the commonalities between activity theory and pragmatism—looking at how they might contribute to each other, as well as to a deeper shared understanding of the activity-orientated nature of human culture, knowing and learning (Engeström, Miettinen & Punamaki, 1999; Miettinen, 2000, 2001, 2006; Miettinen, Paavola & Pohjola, 2012).

For this inquiry—as a primarily Deweyan pragmatist inquiry—I will follow Garrison's (1995, 2001) suggestion that it is Deweyan pragmatism that is able to provide the better epistemological framing for activity theory, rather than Marxist materialism. By doing this, it is possible to appropriate and reframe a number of useful concepts and methodologies—for both agile learning approaches and for this inquiry—in particular, Vygotsky's concept of *The Zone of Proximal Development*, as "*the distance between the actual developmental level as determined by independent problem solving and the level of potential of development as determined through problem solving under adult guidance or in collaboration with more capable peers* [emphasis in original]" (Vygotsky, 1978, p. 86). There are also some useful methodological and conceptual tools within third-generation activity theory. These include Engeström's notions of *expansive learning*, *formative interventions*, *change laboratories*, *boundary crossing* and *knotworking* (Engeström & Sannino, 2010). They also include *situated peripheral*

learning and *communities of practice* (Lave & Wenger, 1991), and *transaction spaces* (McMillan, Goodman, & Schmid, 2016). These will be discussed further in *Part 2*.

Phenomenology

Although phenomenology and pragmatism are generally thought of as quite distinct perspectives, they do share at least a partial common genealogy, through the phenomenology of Georg Wilhelm Friedrich Hegel and the radical empiricism of William James (Van Manen, 2014; Garrison & Shargel, 1988). They are also both primarily concerned with the same underlying philosophical problems of how to dissolve the mind-world dualism of Western philosophy. In particular, they are both concerned with the relationship between individual subjective consciousness and the intersubjective sociocultural world. Both traditions approach these problems from the perspective of *experience*—with the difference being, perhaps, in their different understanding of what actually constitutes experience (Garrison & Shargel, 1988). As phenomenology is quite a general term—applying to many divergent strains of twentieth century philosophy—I will restrict this discussion to the philosophies of Edmund Husserl, Martin Heidegger, Hans-Georg Gadamer and Maurice Merleau-Ponty, as they are the most relevant to this inquiry. Husserl's methodology for the study of consciousness, as it is revealed in lived experience, lays the foundation for phenomenology. Heidegger's existential phenomenology returns knowing to *being-in-the-world*—as a correction to both Husserl's idealism and Western metaphysics. Gadamer's hermeneutics—as the art of understanding—builds on Heidegger's insight that *understanding* is the fundamental mode of *being-in-the-world*. Merleau-Ponty also follows Heidegger in developing his embodied phenomenology of perception. Merleau-Ponty's phenomenology, in turn, provides the philosophical basis for contemporary embodied and enactive understandings of cognition.

Husserl's Transcendental Phenomenology

Edmund Husserl, who was incidentally born in the same year as Dewey, is generally regarded as the founder of phenomenological philosophy. Husserl's writings are not only numerous and complex—resulting in many different interpretations and (mis)understandings—his thinking also developed and changed during his life. Nevertheless, it is perhaps possible to distil the key concepts, terms and

methodologies—albeit in an oversimplified way—to get an overall sense of what he was attempting to do. His main project can be seen as an attempt to study consciousness through the description of the essences of pure immediate experience. Husserl initially conceived his phenomenology as a type of scientific method for uncovering the underlying nature and structures of consciousness. This involved a process of introspective examination of how things in their essences (meanings) reveal themselves in immediate pre-reflective consciousness. For Husserl, only evidence revealed in immediate lived experience can serve as the foundation of knowledge (Van Manen, 2014).

> [Husserlian] Phenomenology does not study the "what" of our experience but the "experience" of the what—the experience of the intentional object, thing, entity, event as it appears in consciousness. Phenomenology is the study of phenomena, and the phenomena are someone's experiences—belonging to someone's stream of consciousness. For Husserlian phenomenological inquiry, experience is the thing and "how" the things of experience appear to consciousness is the focus. (Van Manen, 2014, p. 91)

For Husserl, consciousness is both intentional and meaning giving. Following Brentano, intentionality, for Husserl, refers to the aboutness, or attentional focus, of consciousness. Through the meaning-giving nature of consciousness, the world is given meaning, and is effectively constituted by the subject. The subjective nature of world constitution means that worldly environments are perspectival and discriminated in relation to individual subjects. However, our subjective perspectives are not based on *pure* essences, as such. Rather, they are based on uncritically examined unconscious attitudes, assumptions and prejudices—which Husserl refers to as the *natural attitude*. In order to uncover the pure essences of things, and free ourselves from our taken-for-granted assumptions, we need to perform what Husserl calls the *epoché*. In the epoché, our natural everyday attitude is bracketed, or suspended, in order to "go back to the things themselves" (Van Manen, 2014, p. 92).

More generally, the epoché involves the suspension of the natural realism of the natural attitude, in which the existence of the mind-independent world is uncritically taken for granted. For Husserl, it is only by performing the epoché that we are able to get underneath our naïve, unexamined experience in order to investigate the underlying epistemological and metaphysical questions in a sufficiently radical way. Having cleared the way from the natural attitude, our attention can then focus on "how and as what worldly objects are given to us." Through this, we "discover the

intentional acts and experimental structures in relation to which any appearing object must necessarily be understood" (Zahavi, 2019, p. 4). The phenomenological or transcendental *reduction* refers specifically to the "systematic analysis of this correlation between subjectivity and the world" (Zahavi, 2019, p. 4).

> This is an analysis that leads from the natural sphere back to (re-ducere) its transcendental foundation (Husserl 1960, 21). Both the epoché and the reduction can consequently be seen as elements in a philosophical reflection, the purpose of which is to liberate us from our natural dogmatism and make us aware of our own constitutive accomplishment, make us realize to what extent consciousness, reason, truth, and being are essentially interlinked (Husserl 1982, 340). (Zahavi, 2019, p. 4)

Garrison & Shargel (1988) note a number of shared themes between Husserl's phenomenology and Dewey's pragmatism. They suggest, however, that it is Dewey who is often the more radical—going beyond Husserl in a number of areas. Both Husserl and Dewey reject mind-world dualism and the physicalistic/naturalistic realism of analytic philosophy. They also both ground knowledge, or knowing, in lived existential experience. However, they have quite different understandings of what actually constitutes experience. For Dewey, experience is the integrated organism-environment transaction—which is both objective and subjective—whereas for Husserl, experience seems to belong to the subject—as experience *of* the world, as it appears in consciousness. This places Husserl in the difficult position of trying to somehow account for the relationship between the individual subject and the everyday *life-world*. He does this by resorting to a transcendental realm of essential structures and essences—outside the subject, yet somehow accessible to them (Garrison & Shargel, 1988).

As a conceptual vehicle to account for the relationship between the individual consciousness and the collective intersubjective sociocultural life-world—and notwithstanding the different usage of the term *consciousness* by Dewey and Husserl—I suggest that Husserl's transcendent realm of meanings and structures can actually be equated with Dewey's, and Vygotsky's, notion of *culture*. In this way, the transcendent realm can be reconnected to the existential world. In other words, the transcendent realm *is* the life-world. Part of the issue with Husserl's phenomenology is that he places the field of meanings, or essences, outside the subject—rather than conceiving it, as Dewey does, as an enculturated field of body-mind meanings, formed through experience. For Dewey, it is the field of body-mind meanings which

give the objects of the world their meaning in immediate experience. Furthermore, the enculturation process *is* the process of habituation of sociocultural knowings and practices—through the subject's experiential transactions with their sociocultural life-world. Consequently, the relationship between individual subjects and the life-world is one of integral functional parts of a unified, single existential world.

Despite the issues with Husserl's phenomenology, as a method of introspective description and analysis of immediate felt experience, it is still able to contribute to qualitative research—but as part of a wider toolkit of methods. However, rather than revealing transcendental structures—in a separate realm to the body-mind—what is actually being revealed is the nature of our body-mind processes themselves. For Zahavi (2019), rather than necessarily following strict phenomenological methods—in relation to epoché and the reduction—the phenomenological orientation towards immediate, felt, lived experience can serve as inspiration to any applied qualitative research.

Heidegger's Existential Phenomenology

Martin Heidegger's philosophical project can primarily be seen as a hermeneutic phenomenological inquiry into *Being*—as the *being* of beings. He explicitly rejected Husserl's transcendental idealism, as well as Western metaphysics, generally. He claimed that by focusing on the nature, or thematization, of particular beings (objects and things) of the world, Western philosophy had forgotten Being. According to Heidegger, although we are only ever vaguely aware of the meaning of Being, it is implicitly understood in the postulating of the existence of particular beings. Through this, Being is able to be revealed through hermeneutic phenomenological inquiry into our everyday experience (Hodge, 2015; Van Manen, 2014). Hermeneutical inquiry is always guided by a pre-understanding, however vague, that allows us to ask the question. In posing the question about the meaning of Being we must already have some pre-understanding or sense of it (Gadamer, 2013). This sense of Being is "revealed in our everyday use of terms like 'is' and 'am' and also in those moments when we are 'touched' by the 'hidden' power of Being" (Hodge, 2015, p. 6). It is this awareness of Being—"the basic understanding of what it means to *be there*, as a particular human being in a given situation"—that Heidegger refers to as *Dasein* (p. 6). Heidegger's phenomenological inquiry takes as its starting point the fact that:

> [H]uman being is always being in a *world*. We reveal ourselves as entities embedded in our own world, which indicates, for Heidegger, that the complex, articulated whole that he calls 'being-in-the- world'… must be the starting point for inquiry… Dasein is an entity that is part of its context. World and entity, in Dasein's case, cannot be separated. (Hodge, 2015, p. 7)

For Heidegger, however, world is not just the physical material world, but the meaningful contextual background in which Dasein encounters things and other people. It is in this way that Heidegger distinguishes between *being-in-the-world* and particular *beings*—as objectively present entities—which had been the focus of traditional ontology and metaphysics. Rather than encountering present entities as objects with properties and characteristics (present-at-hand), Dasein encounters objects primarily as things in their use (ready-to-hand) (Hodge, 2015; Van Manen, 2014; Gadamer 2013; Heidegger, 1927/2008).

> [W]hat Dasein experiences is things in use or ready to use that are already embedded in our practical dealings…we do not really even encounter isolated, individual 'handy' things, but things that belong together and refer to each other, such as things on the computer table or in the kitchen. Handy items are encountered in the immediate context of some work that takes place in our immediate environment. Handy things all have the character of 'in-order-to'…in the setting of immediate tasks. (Hodge, 2015, p. 8)

Baert (2009) suggests that Heidegger's existentialist phenomenology, in rejecting Husserl's transcendentalism, moves phenomenology closer to the pragmatist perspective. Firstly, they both "recognise the quintessentially human nature of cognitive, ethical and aesthetic claims" which bring into question the traditional notions of objectivity and epistemology (p. 30). Secondly, they both reject the subject-world dualism of traditional Western philosophy—with knowledge being "seen as inevitably embedded in and practically engaged with the world" (Baert, 2009, p. 30). Thirdly, both pragmatism and existential phenomenology reject the *spectator* theory of knowledge—in which knowledge is seen as an internal mental representation of an independent external world. Fourthly, they both see meaning and knowing (for pragmatism), or understanding (for existentialism), in terms of situated purposive action, and embedded within larger sociocultural systems.

According to Rorty (1976), although there are many similarities between Dewey's pragmatism and Heidegger's existentialism, at their foundation they are quite different philosophical projects. Both Dewey and Heidegger sought the end of metaphysics,

and the dissolving of the mind-world dualism, through grounding knowing in practical, situated existential experience. As such, they can be both considered in some ways to be existentialist and pragmatist. The difference, however, is not only in their understanding of existence, but also in their general orientation towards philosophy. For Dewey, philosophy is the ultimate form of *intelligent* criticism, or inquiry, but must always return to experience to make a practical difference in the everyday, existential human world. Heidegger, however, has no humanistic pretentions and ultimately recedes from the practical everyday world, into a contemplative world of *Thought*, as a way of being open to Being (Rorty, 1976).

> Dewey found what he wanted in turning away from philosophy as a distinctive activity altogether, and towards the ordinary world—the problems of men, freshly seen by discarding the distinctions which the philosophical tradition had developed. Heidegger hoped that a new path would open. But he thought we should only see it open if we detach ourselves from the problems of men and are still; in that silence we may perhaps hear the word of Being…By offering us "openness to Being" to replace philosophical argument, Heidegger helps preserve all that was worst in the tradition which he hoped to overcome. (Rorty, 1976, pp. 304–305)

Although Rorty regarded Heidegger and Wittgenstein, along with Dewey, as the three most important philosophers of the 20th century (Biesta & Burbules, 2003; Bernstein, 2010), it is Dewey's philosophical orientation that Rorty leans towards. For Rorty (1976), Dewey offers a more promising way out of traditional metaphysical impasses and provides a more practical framework for engaging with the real-world "problems of men." However, in opening up a dialogue between pragmatism, existentialism, hermeneutics, critical theory and poststructuralism, neopragmatism attempts to dissolve many of the perceived differences (Chin, 2016; Bernstein, 2010). In this way, they are able to contribute to a fuller and more multi-dimensional understanding of human *being*—as a situated and purposeful *acting-in-the-world.* Baert (2009) takes a similar neopragmatist approach to social science research. Following Rorty—but also influenced by Dewey, Mead, Heidegger, Gadamer, Sartre and Levinas—Baert (2009) proposes "a dialogical model, which cuts right across the traditional dichotomy between the knower and the known," and which "conceives of the encountering of different forms of life as an enormous opportunity to re-describe, re-assess, and recreate ourselves" (p. 33).

> [The pragmatist-inspired proposal] provides the right philosophical backing to support and define the type of social scientific knowledge that engages with

groups and communities outside the safe contours of the ivory tower...Rather than conceiving of social research as, primarily, an explanatory or predictive endeavour, I have shown that this neo-pragmatist view promotes social research in terms of an ongoing engagement with otherness, a process which ultimately contributes to the pursuit of richer forms of collective re-description. In this view, research takes a central role in the ability of communities to distance themselves from their hitherto unacknowledged presuppositions, to assume different points of view and, ultimately, to make a difference to the social world which those communities have helped to create and which they inhabit...The question should no longer be how we can apply the works of our intellectual heroes or preferred models (what-ever they are) to the empirical data, but how we can learn from the encounter with the un-familiar to challenge them and think differently. (Baert, 2009, pp. 37–39)

Baert's (2009) neopragmatist approach to social research has particular relevance for education research and this inquiry into nomadic agile forms of learning. It calls for research to move beyond the walls of the university and to engage directly with the participants in the communities themselves. For this inquiry, and for nomadic agile learning, this means moving beyond institutional walls and engaging directly with the various communities within the domain of practice—including practitioners and workplaces. Through this ongoing dialogue with other perspectives and people, existing presuppositions are questioned and new, richer forms of collective redescription and understanding are able to emerge.

Gadamer's Hermeneutic Phenomenology

Hans-Georg Gadamer (2013) draws on Heidegger's hermeneutic phenomenology (Heidegger, 2008), grounded in the *facticity of being*, as the starting point for developing his own hermeneutics of understanding. Although primarily developed for the understanding of historical texts, it can also be applied to understanding in general. For Gadamer, following Heidegger, *understanding* is the *"original form of the realization of Dasein"* as *potentiality-for-being* (Gadamer, 2013, p. 260). As such, understanding is both projected towards future possibilities, and rooted historically in custom and tradition. "[T]here is no understanding or interpretation in which the totality of this existential structure does not function" (Gadamer, 2013, p. 261). It is important to note that Gadamer did not consider his phenomenological hermeneutics to be concrete method, as with Dilthy's hermeneutic circle (Bargiela-Chiappini, 2010). Rather, he regarded it as an attempt to understand the *art of understanding*— particularly in relation to historical texts—as is it is revealed to us in our lived experience (Van Manen, 2014; Gadamer, 2013).

> The general structure of understanding is concretized in historical understanding, in that it is the concrete bonds of custom and tradition and the corresponding possibilities of one's own future become effective in understanding itself. Dasein that projects itself on its own potentiality-for-being has always already "been." This is the meaning of the existential "thrownness." The main point of the hermeneutics of facticity and its contrast with the transcendental constitution research of Husserl's phenomenology was that no freely chosen relation toward one's own being can get behind the facticity of this being. Everything that makes possible and limits Dasein's projection ineluctably precedes it. (Gadamer, 2013, p. 264)

For Gadamer (2013), all understanding is *interpretation* and, as such, is always preceded by fore-understanding grounded in the historicity, or *thrownness* of Dasein. However, although we should not necessarily uncritically accept our fore-understanding, we nevertheless need to recognize that all movement of understanding begins with an initial historical pre-understanding. "History does not belong to us; we belong to it…[We] understand ourselves in a self-evident way in the family, society, and the state in which we live. The focus of subjectivity is a distorting mirror" (Gadamer, 2013, p. 289). Gadamer characterizes pre-understandings as *prejudices*. He seeks to discredit what he considers to be the *prejudice against prejudice* in enlightenment thinking and reestablish the authority of tradition. "*Understanding is to be thought of less as a subjective act than as participating in a tradition*, a process of transmission in which past and present are constantly mediated" (Gadamer, 2013, p. 302).

The Gadamerian notion of the *situation* represents the standpoint or perspective that limits the possibility of vision. What he calls the *horizon* is "the range of vision that includes everything that can be seen from a particular vantage point" (Gadamer, 2013, p. 313). Although hermeneutical situations are initially determined by our fore-understanding or prejudices—which constitute our present horizon—they are not fixed. Rather, they are continually in the process of being formed and reformed through the ongoing testing of our prejudices—including through our encounters with the past in understanding the traditions we are embedded in. As such, the process of understanding always involves a *fusing of horizons* (Gadamer, 2013).

In addition to *interpretation*, Gadamer also seeks to reclaim *application*—as part of the unified process of understanding. "[U]nderstanding always involves something like applying the text to be understood to the interpreter's present situation" (2013, pp. 318–319). Consequently, in application in any particular situation, any text is always

understood in a new and altered way: "Understanding here is always application" (Gadamer, 2013, p. 319). However, as all understanding is also historical, there is always a tension between the identity of the text, or object, and the unfolding situation in which it is being interpreted. Consequently:

> [U]nderstanding is not a method which the inquiring consciousness applies to an object it chooses and so turns it into objective knowledge; rather, being situated within an event of tradition, a process of handing down, is a prior condition of understanding. *Understanding proves to be an event*. (Gadamer, 2013, p. 320)

In addition to showing that all understanding—including scientific understanding—is embedded in tradition, Gadamer also points out the limits of purely reflective philosophy. He suggests that it is *experience,* as a form of *self-understanding*, that offers a way of resolving the impasse between empirical realism and subjectivism.

> The life of mind consists precisely in recognizing oneself in other being. The mind directed toward self-knowledge regards itself as alienated from the "positive" and must learn to reconcile itself with it, seeing it as its own, as its home. By dissolving the hard edge of positivity, it becomes reconciled with itself. In this kind of reconciliation is the historical work of the mind, the historical activity of the mind is neither self-reflection nor the merely formal dialectical supersession of the self-alienation that it has undergone, but an *experience* that experiences reality and is itself real. (Gadamer, 2013, p. 355)

For Gadamer, real or genuine experience is experience of human finitude, in which we realize the limitations of our foresight and uncertainty of our plans. In this way, we become open to new experiences. "The truly experienced person…knows that he is neither master of time nor the future" and as a result "acquires a new openness to new experiences…Experience teaches us to acknowledge the real. The genuine result of experience, then—as all desire to know—is to know what is" (Gadamer, 2013, p. 365). But as people are always situated in history and tradition, "genuine experience is experience of one's own historicity" (p. 366). In a similar way to our experiences of others, we must be fundamentally open to the past and listen to what it has to say.

> In human relations the important thing is…to experience the Thou truly as a Thou—i.e., not to overlook his claim but to let him really say something to us. Here is where openness belongs. But ultimately this openness does not exist only for the person who speaks; rather, anyone who listens is fundamentally open. Without such openness to one another there is no genuine bond. Belonging together always also means being able to listen to one another. (Gadamer, 2013, p. 369)

Baert (2009), in his neopragmatist approach to social research, draws on Gadamer's notion of *Bildung*, or self-formation, to argue for a more open orientation in which participants in social research—through recognizing their own fallibility—are open to learning and seeing things differently.

> Gadamer contends that, in the case of genuine understanding, people are willing to recognise the validity and coherence of what is being studied to such an extent that this recognition might undermine some of their own presuppositions…Eventually self-formation does not simply imply that people obtain knowledge of new forms of life but also that they acquire deftness in obtaining that type of knowledge. (Baert, 2009, p. 35)

There are a number of similarities between Gadamer's hermeneutics and Dewey's theory of inquiry—although it is difficult to draw exact parallels due to their different genealogy and use of language. Firstly, Gadamer's and Heidegger's notion of *understanding*, as the basic mode of Dasein, can be equated with Dewey's notion of mind, as the general background field of meanings. Secondly, Gadamer's account of the process of coming into understanding, as the fusion of horizons, has parallels with Dewey's notion of consciousness, as the process of mind reorientating itself to new meanings. In fact, the horizon metaphor can be traced back, via Husserl, to Williams James' account of mind and consciousness (Garrison & Shargel, 1988). Thirdly, Gadamer's idea that the process of understanding is a unified process—involving interpretation and application—is also consistent with both Peirce's triadic semiotics—of the sign, signified and interpretant—and Dewey's account of knowing as situated activity. Fourthly, Gadamer's and Heidegger's situating of Dasein within historical tradition has parallels with both Dewey's and Vygotsky's situating of individual encultured minds within historical sociocultural contexts. Fifthly, although both Dewey and Gadamer account for the dissolving of the subject-object dichotomy through *experience*, their understanding of experience differs somewhat. For Dewey, experience is the fundamental existential relationship between all organisms and their environments. As such it precedes language, mind and meanings. Alternatively, for Gadamer, experience seems to relate only to human experience and consciousness. Finally, Gadamer's call for genuine openness to others, as well as to other traditions and histories—*listening to what to what they have to say*—also echoes Dewey's call for open participatory communication and democracy. The consequence of this openness is also reflected in Dewey's and Gadamer's respective notions of personal growth and self-formation (Bildung).

There are, however, also some important differences. Gadamer's focus is primarily on the conceptual understanding of texts, from an introspective phenomenological perspective. In contrast, Dewey's pragmatism is a generalized theory of knowing from a naturalistic empiricist perspective, that includes all forms of knowing. These range from embodied subconscious knowing, through practical knowing-as-activity, to conceptual knowing and theorizing. However, Gadamer's account of understanding is able to add more depth and nuance to Dewey's theory of inquiry—particularly in the type of understanding involved in concept and theory development involving language. Furthermore, Gadamer's hermeneutics can also be applied to practical and social forms of understanding. For example, in his *pragmatist hermeneutics*, Shalin (2007) seeks to break hermeneutics free from the narrow confines of linguistic practice. By pragmatizing hermeneutics, he "broadens the notion of meaning beyond its familiar identification with linguistic intent and logical sense to include affective narrative, body work, and behavioral performances" (Shalin, 2007, p. 197). In turn, this opens up possibilities for *social situational hermeneutics* in which we listen in an open way to what the situation says to us.

Finally, just a brief comment about *language*. For Gadamer, language occupies a position of central importance, as the *medium* of hermeneutic experience. This may be predominantly true in the understanding of the more complex meanings involved in abstract concepts and theories. However, other forms of practical embodied knowing, and immediate sensory perception, might be better understood in non-language terms. Given that organisms without language, including prelingual children, are able to act and perceive in *knowing* ways, it would seem that understanding at this level does not necessarily involve the medium of language. In contrast with Gadamer, both Dewey and radical enactivists (Gallagher, 2017; Hutto & Myin, 2017) conceive knowing, or understanding, in terms of the dynamical transaction of the body-mind organism with its sociocultural-material environment. Although, for Dewey, language plays an essential role in the (co)development of mind and meaning, it is *experience* that provides the more fundamental ground for all forms of knowing. On this view, language and culture are seen as derived mediums that only come into play in human (minded) understanding.

Merleau-Ponty's Phenomenology of Embodiment

In his phenomenological inquiry into the embodied nature of mind and perception, Maurice Merleau-Ponty also follows Heidegger's existential orientation—of *in-the-worldness*—but moves closer to Dewey's holistic notion of the integrated body-mind (Lakoff & Johnson, 1999). For Merleau-Ponty, the fundamental way in which we engage with the world is through our immediate, preconscious embodied experience, prior to having reflective conscious knowledge of it. In other words, we firstly know the world corporeally through our embodied activity, rather than in a disembodied intellectual way. "[W]e do not know what we see. Most of the time, we act and do things seemingly unthinkingly… as if the body already knows what to do and how to do it" (Van Manen, 2014, p. 128). It is through our embodied relations with others and the things of the world that we come to know ourselves. Furthermore, in a similar way to Heidegger's *being-in-the world* and Dewey's notion of *transactional experience*, the embodied subject is not only affected by the others and things of the world—they are, in turn, affected by the subject, in the "original interwovenness of human and world," (Van Manen, 2014, p. 129). "Perception, in its fullest, most complex, and most subtle sense, is the preconscious or prereflective act of existence. Reflection is only possible because our existence is first of all and always prereflectively entwined into the world" (p. 129).

In relation to language, Merleau-Ponty rejects the notion that words carry meaning separately from their use, and that we are somehow able put thoughts into words. Rather, thinking and feeling are present in words in the act of saying and writing. Thought and words are inseparable. "So, when I hear myself speak, I hear myself think" (Van Manen, 2014, p. 129). However, our communication with others is a dynamical two-way process involving living bodies. This prereflective, embodied *intercorporeal* communication—in which each person's body is affected by the other's body—involves not just language but also gestures, facial expressions, tone of voice, and body language (Fuchs, 2017):

> The communication or comprehension of gestures comes about through the reciprocity of my intentions and the gestures of others, of my gestures and the intentions discernable in the conduct of other people. It is as if the other person's intentions inhabited my body and mine his. (Merleau-Ponty, as cited in Fuchs, 2017, p. 201)

As Lakoff & Johnson (1999) note, Merleau-Ponty's notion of embodiment bears a close resemblance to Dewey's notion of the body-mind. As "two of the greatest philosophers of the embodied mind… John Dewey, no less than Merleau-Ponty, saw that our bodily experience is the primal basis of everything we can mean, think, know, and communicate" (Lakoff & Johnson, 1999, p. xi). However, although their philosophies lead to the same conclusions, in regard to dissolving the mind-body and mind-world dualisms, they do represent different perspectives—albeit in relation to the same philosophical problems. Dewey comes at the problem from a naturalistic empirical perspective, verging on the anthropological. Although he acknowledges the important role that feelings, emotions and introspection play in *knowing*, he develops his philosophy through a complex process of inquiry. Merleau-Ponty, on the other hand, takes a phenomenological methodological approach. As such, he relies on revealing meaning in prereflective consciousness, through introspection. However, for Lakoff & Johnson (1999), relying solely on phenomenological reflection by itself is not sufficient:

> Although we can have a theory of a vast, rapidly and automatically operating cognitive unconscious, we have no direct conscious access to its operation and therefore to most of our thought. Phenomenological reflection, though valuable in revealing the structure of experience, must be supplemented by empirical research into the cognitive unconscious. (p. 5)

This, then, leads to a discussion of *enactivism*, a contemporary *philosophy of nature* that shares an embodied action-orientated understanding of cognition/experience with Deweyan pragmatism (Gallagher, 2017). Specifically, enactivism brings together Merleau-Ponty's embodied phenomenology, contemporary cognitive neuroscience and the evolutionary biology of Francesco Varela (Varela et al., 1991).

Enactivism

In the following discussion of enactivism, I will focus mainly on the radical forms of enactivism put forward by Shaun Gallagher in his book, *Enactivist Interventions: Rethinking the Mind* (2017), and, to a lesser extent, by Daniel Hutto and Erik Myin's *Evolving Enactivism: Basic Minds Meet Content* (2017). Gallagher (2017) not only offers a comprehensive account of the various contemporary cognitive science perspectives on embedded, enactive, embodied and extended mind theories—his

own radical enactivism moves beyond many of these positions, in a direction closer to Deweyan pragmatism (see also Dreon, 2019).

The enactive approach to cognition was first introduced by Varela et al. (1991) in their book *The Embodied Mind*, in response to what they perceived as an explanation gap between our phenomenological experience of consciousness and the cognitivist neuroscientific accounts of cognition, as computational processes and structures in the brain. For Thompson (2007), this separation of *cognitive processes* from *consciousness* perpetuates and extends mind-world dualism "by opening up a new gap between subpersonal, computational cognition and subjective mental phenomena" (p. 6). In addition to the classical mind-world and mind-body problems, for Thompson (2007), this gap presents a further *mind-mind* problem—between the computational cognitivist mind and the phenomenological mind of conscious experience (Jackendoff, as cited in Thompson, 2007). In response to the disembodied computational models of cognition, which fail to account for the brain's relationship to the living body, and the organism's relationship to the environment, *embodied dynamicism* emerged in the 1990s. On the embodied dynamicism view, "cognitive processes emerge from the nonlinear and circular causality of continuous sensorimotor interactions involving the brain, body, and environment." On this account, mind is seen as an "embodied dynamic system in the world" rather than as a computational neural network, with its locus in the head (Thompson, 2007, p. 11).

> The central idea of the embodied approach is that cognition is the exercise of skillful know-how in situated and embodied action (Varela, Thompson and Rosch, 1991). Cognitive structures and processes emerge from recurrent sensorimotor patterns that govern perception and action in autonomous and situated agents. Cognition as skillful know-how is not reducible to prespecified problem-solving, because the cognitive system both poses the problems and specifies what actions need to be taken for their solution. (Thompson, 2007, p. 11)

In its original form proposed by Varela et al. (1991), the enactive approach can be seen as a bringing together of embodied dynamicist notions of mind and phenomenological accounts of subjective lived experience. These include not only Merleau-Ponty's phenomenology of embodied practice, but also Husserl's notion of *I can*, and Heidegger's concept of *ready-to-hand* (Thompson, 2007). Derived from the term enaction—which connotes the intentional carrying out of an action—enactivism emphasizes "the idea that perception is for action, and that action-orientation shapes most cognitive processes" (Gallagher, 2017, p. 5). The phenomenological orientation provides enactivism with a first-

person experiential account of the lived body—as it is revealed in consciousness—while embodied dynamicism provides a third-person perspective of the dynamical organism-environment interaction, as the central unit of analysis. According to Gallagher (2017), enactivism is based on a number of background assumptions. Firstly, cognition is not something that happens solely in the brain, but rather emerges from the dynamical processes distributed across the brain, body and environment. As such, cognition is extended, intersubjective and socially situated. Secondly, rather than the meaning of the world being pre-given, it emerges and is structured through cognition and action. Thirdly, the meaning, or function, of cognition is in its role in the sensorimotor coordination in an environment—rather than as a process of internal-external representational mapping. Fourthly, more complex cognitive processes—such as reflective thinking, imagination and reasoning—are also considered to be skillful, situated and embodied know-how. Fifthly, in addition to involving sensorimotor coordination, all cognitive processes—including higher-order cognitive functions—also involve embodied affective and autonomic aspects, or systems (Gallagher, 2017, p. 6).

In addition to phenomenology, enactivism also draws on the ecological psychology concept of *affordances* (Gibson, 1977). Environmental affordances, for Gibson, "are what it *offers* the animal, what it *provides* or *furnishes*, either for good or ill" (Gibson, 1977, p. 1). The implication of affordances is that the animal and the environment are complementary and should be understood in relation to each other. Rather than affordances being a collection of abstract physical properties, their meaning is considered to be in what they *afford* relative to the particular postures and behaviors of particular animals. In this way, the affordance is considered to be both an objective and subjective property. "It is equally a factor of the environment and a fact of behavior. It is both physical and psychical, yet neither. An affordance points both ways, to the environment and the observer" (Gibson, 1977, p. 2). For socioculturally orientated human animals, affordances include not only those of the natural environment, but also sociocultural objects and other people. "What other persons afford, comprises the whole realm of social significance for human beings. We pay the closest attention to the optical and acoustic information that specifies what the other person is, invites, threatens, and does" (Gibson, 1977, p. 2).

Although enactivists share an understanding with *extended* and (socioculturally) *embedded* mind perspectives of cognition—as not being solely in the head—they go beyond these positions by rejecting all forms of functionalism and representation—

including minimal representations. Rather, enactivists claim that the physiological and neuronal processes that contribute to the constitution of cognition cannot be reduced to internal representations (Hutto & Myin, 2017; Gallagher, 2017). In classical cognitivism accounts, mind is seen as an internal representation of a separate external real world—which is used to interpret raw sense perception and is updated when mismatches are encountered. This is what Dewey characterizes as the *spectator view,* in which the separate subject, rather than actively participating in the dynamic and changing world, is merely an observer (Fesmire, 2015). For Anderson, "[t]his representation-rich view treats cognition as something 'post-perceptual' something added to perception to make sense of it" (as cited in Gallagher, 2017, p. 13). In contrast, for enactivists—who conceive of cognition as interactive, dynamic and relational, and distributed across the brain, body, body and environment—representations are just an unnecessary extra conceptual abstraction that does no explanatory work. Although they accept that that cognition is co-constituted by organic structures and processes that occur in the body and brain, it does not follow that these equate to internal representations or information processing. For radical enactivists Hutto & Myin (2017), cognition does not involve any "picking up and processing of information that is used, reused, stored, and represented in the brain." Rather, it "is nothing short of organisms actively engaging with selective aspects of their environmental in informationally sensitive, spatiotemporally extended ways" (p. xiv).

According to Gallagher (2017), a common objection raised to both extended mind and enactivist approaches—that needs to be addressed—is that they commit the *causal-constitution* fallacy. This involves making an inference from the causal role, that bodily and environmental factors play in cognitive processes, to one of constitution. This might be demonstrated by the use of external worldly objects, such a notebook or smartphone, to causally support or enable memory—rather than "being a cognitive process itself" (p. 7). However, for Gallagher (2017), this only necessarily holds true if causation and constitution—as in the cognitivist, traditional metaphysical view—are thought of as independent. In contrast, enactivism takes a dynamical system and *diachronic constitution* perspective, in which:

> Brain, body and environment are said to be dynamically coupled in a way that forms a system, and the coupling is not equivalent to identity of material parts; rather it involves physical relational processes. Significant changes in one part of

the system will cause changes or adjustments in the other parts. For the enactivist just these dynamical casual relations constitute the system. (Gallagher, 2017, p. 8)

To gain a better understanding of how these dynamical casual relations constitute cognition—from the unconscious subpersonal cellular and neuronal processes, through the practical worldly engagement of the living present, to so-called higher-order cognitive functions—Gallagher (2017) appeals to Varela's (1999) cognitive timescales. Varela proposes three distinct timescales: the *elementary scale*—between 10 and 100 milliseconds, the *integrative* scale—from 0.5 to 3 seconds, and the *narrative* scale—above 3 seconds. The elementary scale relates to subpersonal/subconscious neurophysiological processes of cellular rhythms and neuronal discharges. Processes at the elementary scale are integrated into the integrative scale, which is experienced phenomenologically as the living present. It includes, for example, basic actions such as reaching and grasping. "[N]euronal-level events on the elementary scale synchronize (by phase-locking) and form aggregates that manifest themselves as incompressible but complete acts on the integrative scale" (Gallagher, 2017, pp. 8–9). The narrative scale relates to more complex actions and cognitive processes that unfold over longer time periods (Gallagher, 2017).

For Gallagher (2017), as embodied mental processes are distributed across multiple different neural, behavioral and environmental levels, as well as across multiple different timescales, they are considered to be diachronically constituted in a "temporally integrated dynamical system" (p. 8). This is in contrast to cognitivist representational accounts, in which they are considered to be synchronically causal. Both neural and non-neural bodily, environmental and social factors—in their dynamical relations—are both causal and constitutive:

> The constituent elements may very well be in complex, reciprocal causal relations with each other, but just these reciprocal causal relations make the mental process what it is. Thus, an intervention that changes the causal relations in a dynamical system will also change the system as a whole. (Gallagher, 2017, p. 8)

Enactivists fully acknowledge the importance of the physiological brain as a necessary constitutive element in cognition, but as an integral part of a larger dynamical systems involving the body and sociocultural-material environments. In a similar way to Deweyan pragmatism, the foundational unit of explanation is the dynamical organism-environment interaction, or transaction. Where they differ, however, is that for Dewey, the organism-environment transaction is what constitutes *experience;* while, for

enactivists, the dynamical organism-environment coupling is considered as *cognition* (Dreon, 2019). I will return to these differences and their implications later in the section.

Many of our bodily processes and movements happen at the subpersonal level in the elementary timescale, beyond our conscious awareness and control. This may seem obvious in the case of our autonomic nervous and endocrine systems, for example. But even in the finely-tuned motor control involved in reaching out to grasp an object, elementary-scale dynamical processes are at play, involving limbs, muscles, the peripheral nervous system, the vestibular system and the brain—all contributing to dynamic real-time bodily adjustments in their environmental interactions. It is this implicit knowing and momentary adjustment in the flow of overt action that Schön is referring to, in his notions of *knowing-in-action* and *reflection-in-action*. Even though we may not be explicitly conscious of the actions and reflections taking place at this level, it can nevertheless still be considered to be a form of cognition, or *skillful knowing*. Similarly, over longer timescales involving deliberation and conscious reflection, neural activity at the elementary scale still forms a necessary part of the activity, "but also my location, and who I'm with, and my past practices, current physical skills, and my health status, not to mention my mood, will to some degree play contributory roles" (Gallagher, 2017, p. 11). In addition to sensory-motor mechanisms, affective states such as hunger, fatigue, pain, emotion and mood also play important roles in cognition over all three timescales. There are also implications for traditional notions of agency and free will. Rather than being solely determined by the subject, these too are enabled and constrained by all the factors constituting the dynamical cognitive system.

In rejecting computational and representationalist accounts of cognition, however, enactivists need to provide a plausible alternative of how the brain functions within dynamical cognitive systems. Gallagher (2017) illustrates the enactivist account through (re)interpreting recent predictive coding/processing theories of brain function. Predictive coding attempts to explain brain function in terms of Bayesian inference, whereby "the brain makes probabilistic inferences (forms 'hypotheses') about the world and corrects those inferences to minimize prediction errors" (Gallagher, 2017, p. 16). Predictions are based on prior experience (and brain states) which are compared with real-time incoming sensory data. In the case of mismatches, errors are then "sent back up the line and the system adjusts dynamically back and forth until there is a

relatively good fit" (p. 16). On traditional accounts, the brain subsequently updates its internal representation of the world. However, in order to maintain its integrity in the world, the organism acts in/on the environment in such a way as to minimize any sensory surprises. This is known as *active inference.* Although the notion of active inference goes some way towards recognizing the importance of embodied and environmental factors in brain functioning, for enactivists it doesn't go far enough. Gallagher (2017) argues that we should rather think of the process in terms of "an ongoing dynamical adjustment in which the brain, *as part of and along with the larger organism*, settles into the right kind of attunement with the environment—an environment that is physical but also social and cultural." As such, rather than being an inference, it should be considered simply as "a *doing*, an enactive adjustment, a worldly engagement" (Gallagher, 2017, pp. 18–19).

For enactivists, following Merleau-Ponty, and also echoing Dewey and Mead, human interactions are primarily sociocultural. Not only do they involve interactions with sociocultural objects, but also intersubjective interactions with other embodied minds—including intercorporeality and interaffectivity (Fuchs, 2016). For De Jaegher & Di Paolo (2007), social interactions are seen as patterns of coordination between subjects in the process of trying to understand each other (and the world). Importantly, and in a similar way to Dewey's theory of communication, individuals are not ready-made interactors, rather they co-emerge *through* interaction. As such, for Gallagher (2017), intersubjective social environments involve distinct forms of dynamic sensory-motor coupling, which are partly constituted by each person's "perception and response to facial expression, posture, movement, gestures etc. in rich pragmatic social contexts" (p. 12). Dynamic social situations, of course, also involve neuronal processes, including mirror neurons, as part of the larger dynamic processes. For enactivists, other people are seen as being affordances for social interaction, and social cognition is viewed as a process of attunement "that allows me to perceive the other as someone to whom I can respond or with whom I can interact. In the intersubjective context, perception is often for interaction with others" (Gallagher, 2017, p. 12).

As already mentioned, there are a number of similarities between enactivism and pragmatism—as well as some critical differences (see Dreon, 2019). Even though enactivism has its philosophical roots in phenomenology, Gallagher (2014, 2017)

suggests that pragmatism contains many useful resources for enactivism and can actually be considered a forerunner to both enactive and extended theories of mind. He notes that Dewey, in particular, outlined the role of the brain in embodied action-orientated cognition in 1896, in his famous essay *The Reflex Arc Concept in Psychology* (see also Heras-Escribano, 2019). Dewey's concept of experience, as the dynamical transaction between the integrated body-mind organism and its environment, aligns with the enactivist view that "the brain is one part of the body in which dynamical regulation goes both ways, with the brain both biologically and functionally dependent on the rest of the body, which is in dynamical interaction with the environment" (Gallagher, 2017, p. 51). In relation to *extended mind theory* (Clark & Chalmers, 1998), Gallagher (2017) and Madzia (2013) suggest that it too was also foreshadowed by Dewey, Mead and Peirce over a century ago. In particular, Gallagher (2017) notes that extended mind theorist Richard Menary (2007) appeals directly to Dewey's organism-environment transactions in his "characterization of how embodied cognition incorporates the environment" (p. 52), as well as to Pierce's *continuity principle* between mind and world as a way of "understanding a neutral ground between internalist and externalist conceptions of representation" (Gallagher, 2017, p. 52).

Furthermore, Gallagher (2017) proposes that Dewey's notion of the *situation* provides the conceptual resource to bring together enactive and extended theories of mind as *extended enactive mind*. To recap, for Dewey, the relationship between the organism and the environment is not one of two separate self-sufficient entities interacting with each other. Rather it is a dynamical intertwined transaction in which they are always found coupled together. "An organism never exists (and can never exist) apart from some environment; an environment is what it is only in conjunction with a particular organism that defines it" (Gallagher, 2017, p. 54). Dewey defines the *situation* as the organism and environment taken together in co-relationship where they are defined relative to each other—in dynamical transaction. Furthermore, for Dewey and Mead the situation is always social. Even the physical objects of the environment, in their discrimination by a social agent, are always being understood in their sociocultural meanings (Simpson, 2009; Shalin, 2000).

> As extended and enactive, the mind is *situated* in the way that Dewey defines this notion. The situation includes not just our notebooks, computers, and other cognitive technologies, and not just the social and cultural practices and institutions that help us solve a variety of cognitive problems, it also includes *us*.

> We are *in the world* in a way that is not reducible to occupying an objective position in the geography of surrounding space, and in a way such that the world is irreducible to an abstraction of itself represented in one's brain. We, as minded beings, are definitely 'out there', dynamically coupled to artifacts, tools, technologies, social practices, and institutions that extend our cognitive processes. Enactivist and extended mind conceptions are, or at least should be, of one mind in this regard. (Gallagher, 2017, p. 57)

The dynamical distributed nature of cognition across brain, body and environment also has implications for traditional understandings of intentionality and agency. Gallagher (2017) suggests that the narrow view of intentionality, as originally put forward by Brentano—which conceives intentionality in terms of internal mental states—cannot sufficiently account for enactivist and extended theories of mind. According to Gallagher (2017), Brentano's understanding of intentionality as the "mark of the mental," due to its subjective nature, is only accessible to the experiencing subject.

As an alternative, Gallagher (2017) proposes the concept of enactive intentionality that is constituted in our sociocultural embodied interactions with others. Informed by Merleau-Ponty's concept of *intercorporiety* and Robert Brandon's neopragmatist socially normative understanding of intentionality, enactive intentionality builds on Husserl's notion of *operative intentionality*—in which "the experiencing agent is intentionally engaged with the world through actions and projects that are not reducible to simple internal states" (Gallagher, 2017, p. 67). "My own intentions are operable, and quite often only emerge, within my perception of the other's intentions. I see the other's actions as an affordance for my own possible responsive action" (Gallagher, 2017, p. 80). Gallagher also notes the strong similarity between the enactive notion of intentionality and Dewey's concept of mind that "is 'formed out of commerce with the world and is set toward that world'; it should never be regarded as 'something self-contained and self-enclosed' (1934, 269)" (Gallagher, 2017, p. 81).

> To the extent that we are all born into a community, our environment is full of intentional practices from the very beginning of our life…In this regard, the mind is constituted by our enactive engagements with our environment, which is both social and physical; and intentionality means that we are 'in the world', distributed over brain-body-environment, and extended in pragmatic and communicative practices that may further supervene on the tools, technologies, and institutional practices through which we engage with the world. (Gallagher, 2017, pp. 81–82)

The idea that mind and intentionality are constituted by the dynamical transactions between the embodied mind and the sociocultural-material environment has implications for traditional notions of agency in relation to learning and education situations. If agency, rather than being solely located in the subject, is distributed across the body-mind-environment situation, then greater consideration needs to be given to the role that the sociocultural environment plays in influencing the attention, motivation and engagement of individual learners. These not only include general societal and institutional cultures, but also intersubjective relations between teachers and learners, learners and other learners, and teachers and institutional management. A common attitude that I encounter—and one that is emphasized in andragogical and heutagogical approaches, as well as in my original agile learning approach—is that the responsibility and motivation for learning rests mainly with the learner. On this view, the learner is expected to be intrinsically self-motivated towards determining their own learning goals and working towards them in a self-directed way. In this way, it is thought that they will be more engaged and invested in the outcome. However, the splitting of motivation into *intrinsic* and *extrinsic* is a false dichotomy. What is often regarded as *intrinsic* is actually constituted in the intersubjective transaction with other people and sociocultural artifacts across multiple contexts. Similarly, the individual's learning goals and self-responsibility are also co-constituted by the norms, practices and narratives within the various sociocultural contexts that they participate in. The implication for teaching and learning practice is that learning situations—as intersubjective sociocultural situations—need to be engaging, encouraging and emotionally supportive. In other words, they need to be supportive communities of teachers and learners, within supportive institutions.

According to both Hutto & Myin (2017) and Gallagher (2017), an issue that is often raised in relation to enactivist theories of mind is that they may be able to account for the basic forms of cognition involved in perception and action, but are not able to account for the so-called *higher* cognitive functions of imagination, memory and reasoning, etc. For *extended* mind theorists, although they accept a form of weak embodied cognition in relation to action and perception, higher cognition must necessarily involve some form of internal representation such as images, maps and concepts that are manipulated in/by the mind. However, for radical enactivists such as Hutto & Myin (2017) and Hutto (2015), as any form of internal representation is a non-starter, they need to be able to provide a different and plausible non-representational, embodied mind account. The proposition that they put forward is to take the way in

which (they perceive) memory and imagination work at the more basic scale of action and perception tasks, and then scale them up to reflective thinking processes that are more memory and imagination intensive. In relatively basic practical activities involving manual tool use, working memory and imagination appear to be seamlessly integrated with perception and overt bodily action. This might equate, for example, to Schön's (1992) notion of the *conversation* with situation, involving *knowing-in-action* and *reflection-in-action*. Gallagher (2017) gives an example of building a stone wall, in which "[t]he mental processes involved in building the wall—the perception, the imagination, the memory—are integrated with the reaching and grabbing and are inseparable from that embodied activity" (p. 189). In this integrated activity, memory is seen as a process of re-enactment of previous perceptions, and imagination as a process of creative simulation of potential future enaction. Consequently, as enaction and perception do not involve representational content, then there is also no reason to think that memory and imagination would involve representation either (Gallagher, 2017). However, for Gallagher (2017), there is still an issue with Hutto's (2015) account, in that his notion of internal simulation implies a separation between mental activity and overt bodily activity. Rather, these need to be considered as an integrated whole in which they are both activities, and in which they are both interdependent and co-constituting.

> I want to argue that an enactivist account of such cognitive activities should focus on the fact that in the kind of activities that we are considering, these activities are just that—activities or *doings*. When I am remembering or imagining something, I am doing something. I am engaged in some kind of action, whether for the purposes of solving a problem or of putting myself in a situation of aesthetic enjoyment, gathering some information, constructing some account, or constructing a wall. To think this way is to focus on the continuity that exists between different cognitive activities—perception, action, memory, imagination, and the more specialized cognitive activities of which we are capable. (Gallagher, 2017, p.191)

Gallagher (2017), draws on the work of Goldstein & Scheerer (1964) regarding the relationship between concrete and abstract attitudes. Concrete behavior "is embedded in and co-determined by the abstract attitude" with both attitudes "always present in a definite figure-ground relation" (Goldstein & Scheerer, 1964, p. 8). Consequently, abstract cognitive activities are not considered as *higher-order* in a cognitive hierarchy. Rather, they are thought of "as integrated with perception and action in an ongoing dynamical pattern, *Gestalt* or figure-ground relation" (Gallagher, 2017, p. 191). Further influenced by Gilbert Ryle's *The Concept of Mind* (1949),

Gallagher (2017) proposes an affordance-based account of imagining "as a form of pretense—a kind of playacting" or "imaging action" in which we actively engage with possibilities. As such, imagining, rather than being a mental activity involved in or preceding playacting, *is* the playacting. "It's literally enacting something in bodily movement that may include the use of props" (p. 193). On this view, imagination involves embodied action using sociocultural artefacts, practices and other people as affordances for thinking about possibilities, which emerge in the interaction. For example, "the actor imagines by acting out and the writer imagines by writing" (p. 194). Based on these examples, Gallagher (2017) then develops a fuller general conception of imagination involving the use of both physical and conceptual affordances in problem solving.

> Imagining involves a variety of different practices—some of them actively embodied, some of them involving the manipulation of bits of the environment, some of them sitting still and picturing something by manipulating concepts or thoughts or images (re-enacted perceptions)—which in any case may still involve affective and kinaesthetic aspects of embodiment. All of these practices may be accomplished at different skill levels. Even in the case of more abstract practices of imagining, we are still dealing with affordances. Pragmatically considered, concepts or thoughts can be regarded as nothing other than affordances that offer (or solicit to us) possibilities to follow one path or another as we engage in thinking… In this respect, the imaginative practice is to manipulate concepts, thoughts, images—take them up and play with them, move them around, in order to solve a problem, or map them onto novel affordance spaces. (Gallagher, 2017, pp. 195–196)

In this concept of imaginative practice, "[a]ssuming, supposing, entertaining, toying with ideas, and considering suggestions are all ways of pretending to adopt schemes or theories" (Ryle, 1949, p. 249). Even though Gallagher does not make the direct connection, it is worth pointing out the strong convergence of his concept of imaginative practice with Dewey's theory of inquiry. For Dewey, when we find ourselves in an indeterminate situation that does not make sense, we engage in reflective thinking in which we consider suggestions (tentative solutions) and try them out—firstly as thought experiments, and then through experimental implementation in practice. On Dewey's view, thinking (involving memory, imagination and reasoning), perception and action are not separate things. Rather, they are all deeply intertwined, functional aspects or modes of experience, as the dynamical transaction between the body-mind and environment. Although Dewey does not use the term *affordance*, which was not coined by Gibson until the 1960s, his notion of *tools* performs a similar role—in that their meaning, in a similar way to Husserl's *I can* and Heidegger's *ready-*

to-hand, is what can be done with them—in other words, the consequences they afford. As an aside, it not surprising that there is a convergence between pragmatism and the work of James Gibson. Gibson was strongly influenced by Edwin Bissel Holt, who was in turn mentored by William James (Heras-Escribano, 2019). Dewey (1929) also refers to Holt, in relation to his work, *The Concept of Consciousness,* as an "original and ingenious thinker" (p. 319). Heras-Escribano (2019) notes a strong parallel between the *ecological psychology* of Gibson and Holt, and the enactivist approach, suggesting that they are able to be bought together as a unified post-cognitivist research program under the umbrella of Deweyan pragmatism.

A second point worth making here, and one that I will discuss in more detail later in *Chapter 7*, is that this account of imagination—as an exploration of, and playing with, possible solutions in the practice of problem solving—has particular relevance for agile learning and the practice of designing. Rather than solving design problems by researching the conditions and then reaching a conclusion using deductive or inductive reasoning, ill-defined design problems are often explored by designers through testing tentative speculative propositions in imaginative practice (Cross, 2016).

For Gallagher (2017), however, imaginative practice involving *mental* reflection is not necessarily the whole story—as many of our everyday actions and perceptions appear to occur without any mental intervention at all. In these situations, there is an embodied knowing or rationality at play, in which "[t]he body and its movement…perform a kind of manual thinking" (Gallagher, 2017, p. 201). This bodily coping can be considered to be rational in the sense that there is a "continuity between the rational movement of the body and reflective thinking" (p. 201). By virtue of being situated and embedded, reflective thinking is as much a skill as physical coping. However, thinking and physical bodily action are not two separate things. Rather, they are just different dimensions of the same flow of performance. Furthermore, this practical embodied wisdom is intersubjective.

> Our perception of objects is shaped not simply by bodily pragmatic or enactive possibilities, but also by a certain intersubjective saliency that derives from the behavior and emotional attitude of others toward such objects…Our worldly knowledge, and our ability to think, are gained in very basic, intersubjective interactions…Thinking, like movement, is an embodied performance…It can be an explicit intersubjective process where we reflect together on a problem to be solved. In this regard, as in perception and action, there are affordances that allow

us to do things, to solve problems, to communicate with others, to construct institutions, and so on. Pragmatically considered, concepts can be regarded as nothing other than affordances that offer (or solicit us to) possibilities to go one way or another as we engage in thinking. (Gallagher, 2017, pp. 203–204)

Again, the enactivist position that Gallagher is putting forward here bears a remarkable resemblance to Dewey's theory of inquiry as an integrated process of reflective thought and action, that can operate over a continuum of timescales from the momentary present to longer narrative inquiries. There is also, perhaps, an even more notable similarity between Gallagher's notions of embodied rationality and reflection, and Schön's notions of *knowing-in-action* and *reflection-in-action.* They address the same lived experience of embodied knowing (without conscious awareness) and the momentary, and often unconscious, thinking that takes place in the midst of action as an adjustment or attunement of the flow of interaction. Schön's metaphor of having a conversation with the tools and materials of the situation also has parallels with Gallagher's notions of dynamical interaction with environmental affordances. The intersubjective determination of embodied and reflective practices aligns with Dewey's theory of communication as intersubjective transactions in which individual body-minds become enculturated and shared activities are coordinated.

However, Deweyan pragmatism is able to perhaps offer a fuller account of how the body-mind acquires its practical wisdom for *knowingly* acting in certain situations, through the concept of *habit*. Habits can be understood as predispositions or attitudes to act in certain ways, in particular situations. As habits are of the integrated body-mind, they are both mental and embodied, and can consequently account for embodied knowing activity, as well as reflective thinking processes. Habits are also able to account for the temporal continuity of experience, in which past experiences live on in present and future experiences. Deweyan habits are also closely related to his theory of mind—as an extensive background field of enculturated and habituated meanings. These can also potentially inform enactivist approaches to how things in the world have meaning for us, in immediate perceptive experience. However, by pushing this comparison further, potential problems arise in relation to the different languages and vocabularies used in Deweyan pragmatism and enactive approaches. What makes Dewey's philosophy prone to misunderstanding is his appropriation of common terms for different purposes. For example, the terms *experience*, *situation*, *habit*, *tool*, *technology*, *mind, body-mind* and *consciousness* all have quite specific meanings for Dewey that differ in varying degrees from their common usage. In

addition, he does not use the terms *enactive*, *cognition*, *embodied* or *affordance*. So, in order to move forward in a meaningful way, a common frame of reference needs to be established.

Dreon (2019) also notes a strong convergence between Deweyan pragmatism and enactivism—particularly with Gallagher (2017)—as philosophies of mind and nature. However, she also draws attention to an important difference. For enactivism, cognition is understood in quite general terms as the dynamical interaction between the organism and their environment. Whereas, for Dewey, cognition—or rather what he refers to as *consciousness* or thinking—does not include the full range of organism-environment interactions. Rather, it refers to just certain phases or parts of experience. For Dreon (2019), this "entails an acknowledgement that human experience is far richer and thicker than the cognitive aspects and processes unfolding within it" (p. 4). However, as Dewey does not use the term *cognitive*, as such, I suggest that it is not possible to make a clear comparison between *cognition*— as the term is used by enactivists—and reflective thought (consciousness), as understood by Dewey. Instead, it might be more accurate and fruitful to draw a comparison between the enactivist notion of *cognition* and the Deweyan notion of *experience*—as both are similarly understood in terms of the dynamical interaction between the organism and their environment. It is true, however, that Dewey did maintain a narrow conception of consciousness, relating only to the conscious awareness of meanings, in their making and remaking in human organisms with language. In other words, consciousness equates to reflective thinking—as an integrated process involving memory, imagination and reasoning, as well as embodied feelings and emotions. Dewey was quite clear that consciousness did not refer to the anoetic *feelings* or *senses* of animals without language. It is in this narrow sense that Deweyan consciousness is understood as a mode, or phase, of experience, in which the organism is undergoing reorientating in response to encountering an indeterminate situation. *Mind*, in Dewey's use of the term, is also used in a narrow sense to refer only to meanings in human organisms with language. Specifically, it is the general background field of habituated and encultured meanings. Other animals, for example, might have some form of understanding of non-linguistic meanings but do not, as such, have mind. In contrast, enactivists have a much wider understanding of cognition—that includes all subconscious, conscious, linguistic and non-linguistic organism knowings across all species—with the terms *cognition*, *mind* and *consciousness* seeming used interchangeably. This broader enactivist notion of

cognition aligns with Maturana's (1970) biological understanding of cognitive systems as living systems. "*Living systems are cognitive systems and living as a process is a process of cognition*. This statement is valid for all organisms, with or without a nervous system" (Maturana, 1970, p. 4). Furthermore, for Dewey, mind is not something that is separate from the body. Rather, the human organism is understood as a continuous whole body-mind (Dewey, 1929). Although this may appear to be just semantics, the enactivist term, *embodied mind*, connotes the mind being somehow contained *in* the body. The notion of enactive mind is also potentially problematic as it connotes perhaps a skillful acting *on* the environment, rather than an integrated two-way transacting, as with Dewey's conception.

Notwithstanding the difficulties in relation to the different vocabularies, I suggest, along with Dreon (2019), that through further dialogue, both pragmatism and enactivism can inform richer understandings of our same shared lived experience. Gallagher (2017) has discussed several ways that Deweyan pragmatism can offer useful resources for enactivism, and I suggest that Dewey's distinction between *mind* and *consciousness*, rather than subsuming them both under the term *cognition*, might provide a further fruitful resource for enactivists. Enactivism can also provide thicker understandings for pragmatists—especially in relation to their (re)interpretations of recent developments in cognitive neuroscience.

An example of a fruitful dialogue between enactivism and pragmatism is the chapter "Dewey Goes the Distance: Situated Habit and Ultraendurance Sports" (Ilundáin-Agurruza et al., 2020). Ilundáin-Agurruza et al., (2020) also note a strong alignment between Dewey's situated, organism-environment transactional account of experience and the situated enactive account of cognition. "[T]he situated and enactive account (SEA) is a fluid and pluralistic approach. Along with Dewey, it disavows computational processes and mental representation in lieu of direct, dynamical, and co-evolving interactions between organisms and environments" (p. 98). For both Dewey and SEA, there is a continuity "from simple organisms to persons, from minimal to complex cognitive processes, and from non-representational to scaffolded, enculturated cognition" (Ilundáin-Agurruza et al., 2020, p. 101). In particular, Ilundáin-Agurruza et al. (2020) draw on Dewey's concept of habit— conceived as a flexible, situated embodied-minded skill, or practical judgement (similar to Aristotelian *phronesis*)—to explain the embodied cognition involved in the interaction of ultraendurance athletes with their extreme and dynamically changing

environments. In these interactions the habituated body-mind dynamically makes in-the-moment adjustments in its attunement with the varying environmental conditions. In this transactive process, the body-mind relies on both its existing bodily habits and its reflective thinking habits in tight, integrated functional coordination—with the thinking involving "an imaginative *phronesis* (IP) that is dynamic and creative" (p. 105). For Dewey, imagination is considered as a dramatic rehearsal of possible courses of action.

> The Deweyan combination of skilled habit (SH) and imaginative *phronesis* (IP), combined into SHIP, provides a perspective that permits navigating through rough situations and finding *a* way. SHIP provides a subtle, situated, context sensitive ability for tacking and maneuvering, as opposed to the mere application of utilitarian or deontological rule application. Aristotelian *phronesis* is then integrated into a dynamic model that is particularized to the needs of the specific situation and whose solution is arrived at much as a doctor draws a diagnosis… The solution is not preset but, much as in athletic abilities, it is skillfully found in the doing. A flexible approach to deliberation is all the more pertinent, from a situated stance, because "our environment changes continually, and we must constantly adapt our practices to unforeseen developments." (Wallace 2009, 25). (Ilundáin-Agurruza et al., 2020, p. 107)

Furthermore, this combination of skilled habit and imaginative *phronesis,* as outlined by Ilundáin-Agurruza et al., (2020), rather than being solely something involved in present-moment action, is really at the core of Dewey's process of inquiry in general, over all timescales. Longer more complex inquiries—involving abstract concepts and reasoning—rather than being a different kind of *higher* cognitive functioning, involve exactly the same kind of situated imaginative deliberation, only scaled up over longer (narrative) timescales. Furthermore, and with particular relevance to agile learning approaches and this inquiry, this account of ultraendurance athletes applies equally to all practices and performance—including designing, making, coding and writing. From this perspective, *learning* is not just the process of formation and reformation of body-mind habits. It also includes the fine-tuned attunements and adjustments of the body-mind habits *in* transaction with their dynamically changing sociocultural-material environments—which are themselves *habits* of attunement and adjustment. Over longer timescales these can be seen as adaptations to more persistent environmental conditions, whereby the ability to adapt is also a skilled habit that is learned.

Enactivism Conclusion / Summary

Although enactivism has its philosophical roots in phenomenology, there are a number of important convergences with Deweyan pragmatism—especially with the more radical forms of enactivism put forward by Gallagher (2017) and Hutto & Myin (2017). However, this should be not entirely surprising, as both phenomenology and pragmatism start with lived worldly experience as the basis for all our knowings and doings. Both pragmatism and enactivism reject the traditional philosophical dualisms of mind-world and mind-body in favour of a naturalistic monism that conceives *cognition* (for enactivism) and *experience* (for Dewey) as dynamically co-constituted by the embodied mind/body-mind organism in interaction/transaction with their sociocultural-material environment. They are also both strongly influenced by evolutionary biology—viewing embodied cognitive/experiential processes in strictly naturalistic evolutionary terms. These form a continuum from the perception and feelings of simple organisms through to the reflective thinking and intersubjective communication of enculturated minded human organisms. What is surprising, though, is that pragmatism is rarely mentioned or acknowledged by most enactivist theorists. Despite these general similarities, however, they are not entirely the same. They are situated within different traditions, with their own genealogies and languages. However, by following Rorty's naturalistic approach of treating different philosophical theories as different methodologies—each with their own vocabularies, concepts and purposes (Chin, 2016)—it is possible to open up a fruitful dialogue between pragmatism and enactivism. In doing this, both traditions are able to contribute perspectives and insights into our same shared human experience—with both pragmatism and enactivism able to learn from each other.

In this vein, Deweyan pragmatism is able to provide the overarching onto-epistemological framing for their shared understandings of the organism-environment transaction/interaction as a situated knowing in-the-world. In particular, Dewey's generalized theory of knowing provides enactivism with a way of resolving the issue of how so-called basic cognition, involved in perception and bodily action, which enactivists refer to as *skillful know-how*, scales up to so-called *higher* cognitive functions involving memory, imagination and reasoning. Ilundáin-Agurruza et al. (2020) show how the Deweyan notions of *skilled habit* and *imaginative phronesis* can contribute to a fuller account of the embodied knowing involved in endurance sports activities. Enactivism, through its phenomenological orientation and embodied

interpretation of contemporary cognitive science, is able to add explanatory nuance and depth to Dewey's general onto-epistemological orientation. In particular, Varela's (elementary, integrative and narrative) timescales are able to contribute to a fuller account of how subconscious cognition/knowing breaks through into the conscious living present, in the form of Schönean *knowing-in/as-action* and *reflection-in/as-action*. Enactivist understandings of socially constituted intentionality, intercorporeality, interaffectivity and affordances can also contribute to pragmatist understandings of the sociocultural emergence of individual minds and the sociocultural situatedness of learning and knowing.

However, for all their similarities, the different use and meanings of their respective vocabularies needs to be acknowledged. Not only can these contribute to misunderstandings, they are also able to reveal differences. In particular, different understandings and usage of the terms *experience*, *cognition*, *mind, consciousness* and *experience* contribute to misunderstandings and potential difficulties aligning the two perspectives. The way the term *cognition* is used by enactivists, to refer to the general dynamical organism-environment interaction, suggests an alignment with Dewey's notion of *experience*. *Mind* and *consciousness*, for Dewey, are understood in a narrow sense as relating to the realm of human meanings and experience. Dewey also makes a clear distinction between mind and consciousness, with mind being the general background field of meanings, and consciousness associated with the processes of reflective thought. In this way, there is perhaps an alignment of Dewey's notion of consciousness with the enactive understanding of *higher* cognition. For enactivism, however, the terms *mind*, *consciousness* and *cognition* are often conflated and used interchangeably. Despite these differences, there is enough commonality between the two positions to continue pursuing an integrated pragmatist-enactivist perspective, or at least continue the conversation. Such an integration might be characterized perhaps as *transactivism*—in which Deweyan *experience* and enactivist *cognition* are similarly understood as deeply intertwined body-mind processes of functional coordination, within multiple simultaneous overlapping sociocultural-material situations, over multiple timescales.

Finally, at a more general level, both Deweyan pragmatism and enactivism can be considered to be *philosophies of nature* (Gallagher, 2017). Both offer holistic nature-bound conceptions of embodied situated cognition/mind/consciousness/experience that are informed by empirical scientific findings, yet do not propose specific research

programmes themselves. For Dewey, philosophy does not necessarily have anything to say about the truth or falsity of scientific claims, but rather is concerned with their meanings. As criticism, philosophy does not have its own concrete subject matter, but draws on the findings and theories of the various separate knowledge domains, critiquing and (re)interpreting them.

> Over-specialization and division of interests, occupations and goods create the need for a generalized medium of intercommunication, of mutual criticism through all-round translation from one separated region of experience to another. Thus philosophy as a critical organ becomes in effect a messenger, a liason officer, making reciprocally intelligible voices speaking provincial tongues, and thereby enlarging as well as rectifying the meanings with which they are charged…As to truth, then, philosophy has no pre-eminent status; it is a recipient, not a donor. But the realm of meanings is wider than that of true-and-false meanings; it is more urgent and fertile. (Dewey, 1928, p. 410)

Gallagher (2017) makes a similar case for enactivism as a *philosophy of nature* that can draw together disparate findings from different scientific disciplines.

> Scientific experiments, designed within the framework of their own particular paradigm, often study the pieces of a system but don't always consider how the dynamical relations among those pieces of work, and don't always have the vocabulary to address those relations. Even working in an interdisciplinary way we often find ourselves building a clunky theory where insights from different disciplines don't integrate well…A philosophy of nature takes seriously the results of science, and its claims remain consistent with them, but it can reframe those results to integrate them with results from many sciences…It offers critical distance and practical suggestions at the same time. (Gallagher, 2017, pp. 22–23)

Relating this then to the current philosophical discussion to establish an onto-epistemological frame for agile learning, it might be seen as providing a 'generalized medium of intercommunication,' within which not only are the different regions of experience dissolved, but also the different conceptual interpretations of those experiences. In particular, it provides a way of understanding the relations between the different areas of experience and theoretical perspectives—from a critical distance. At the same time, it can offer practical suggestions. However, the philosophical framing does not provide any absolute foundational certainties. Rather, it provides a fusion and expansion of our horizons of possible meanings.

Agential Realism

Although Karen Barad's *agential realism* (Barad, 1996) takes its starting point from the quantum physics of Niels Bohr, it is relevant and worth discussing briefly here, as she reaches similar onto-epistemological conclusions to Deweyan pragmatism and enactivism, in relation to how mind-world dualism can be resolved by situating knowing *in* being. Rather than the subject—particularly the scientist—observing and describing an external *real* world, for Barad they are *in* the world as an integral part of the whole. Barad's point of departure is Bohr's *philosophy-physics*, in which he develops a new logical framework to account for the observation/measurement processes involved in scientific experimentation. At the level of quantum physics, in particular, Bohr argued that as it is not possible to separate out the effects of the measurement interaction from the phenomena being observed; the distinction between the object and the *agencies of observation* is consequently undermined. "*[A]s a matter of principle, there is no unambiguous way to differentiate between the 'object' and the 'agencies of observation' – no inherent/naturally occurring/fixed/universal/Cartesian cut exists.* Hence, *observations do not refer to objects of an independent reality*." Rather, "[f]or Bohr, *'objects' and 'agencies of observation' form a nondualistic whole*", with particular instances of wholeness being referred to as "*phenomenon*" (Barad, 1996, p. 170).

For Bohr and Barad, moving the observer from outside nature, to a participant *within* nature, means that rather than *physical reality* being something external to the observer, it is constituted in the whole phenomena. "Phenomena are constitutive of reality. Reality is not composed of things-in-themselves or things behind-phenomena, but things-in-phenomena" (Barad, 1996, p. 176). Based on the foundation of Bohr's nondualistic philosophy-physics, Barad further develops her agential realism as a broad onto-epistemological framework around four main points:

> (1) agential realism grounds and situates knowledge claims in local experiences…(2) agential realism privileges neither the material nor the culture…(3) agential realism entails the interrogation of boundaries and critical reflexivity…(4) agential realism underlines the necessity of an ethics of knowing. (Barad, 1996, p. 179)

In a similar way to Deweyan pragmatism, enactivism and activity theory, Barad (1996) situates knowledge, or knowing, within both sociocultural and physical/material

contexts—rejecting both the objectivist "view from nowhere" and the relativist "view from everywhere" in favour of a "view from somewhere" (p. 180). In scientific experiments, for example, the choice of what is being examined and the (material-semiotic) apparatuses used for observation, measurement and conceptual framing are considered by Barad to be "fully cultural (i.e., social, linguistic, historical, political, etc.) frameworks," rather than being determined by the agency of autonomous individuals. "That is, scientists make meanings within specific communities, they do not do so autonomously" (Barad, 1996, p. 181). However, reality, on the agential realism view, is not wholly socially constructed either, but rather *material-cultural*.

> There is no opposition here between the materiality and social construction: constructedness does not deny materiality. The materiality of the body is not dissipated by its constructedness since reality is constituted "between", the inseparability of nature-cultural / world-word / physical-conceptual / material-discursive. Culture does not displace or replace nature but neither do things exist outside of culture. Phenomena are material-cultural be-in's. (Barad, 1996, p. 181)

The holistic view of phenomena and reality does not deny boundaries that define phenomena but rather conceives them as necessary for the making of meaning, even though they might be socially constructed. What this does entail, however, is that the boundaries are not fixed and must be critically interrogated.

> Theoretical concepts are only defined within a given context, as specified by constructed boundaries. Wholeness is not about the prioritizing of the innocent whole over the sum of the parts; wholeness signifies the inseparability of the material and the cultural. Wholeness requires that delineations, differentiations, distinctions be drawn; differentness is required of wholeness. (Barad, 1996, p. 182)

In scientific experimentation, "the placement of boundary becomes part of what is being described: human conceptual schema are part of the quantum wholeness. Descriptions of phenomena are reflexive, and the shifting of boundaries constitutes a meta-critique" (Barad, 1996, p. 182).

Barad's final point in relation to agential realism is that there is necessarily an ethical dimension to knowing. Characterizing the relationship between the material and the cultural as one of *intra-action*, Barad argues that our culturally "constructed knowledges have real material consequences" that call for "direct accountability and responsibility." The use of the adjectival form of "agency" signifies the active participation of the knower. In contrast to traditional forms of realism, "[a]gency is a

matter of intra-acting, that is, an enactment, it is not something someone has…Agential realism provides an understanding of the possible dynamical intra-actions of nature-culture as ontological be-in's" (Barad, 1996, p. 183).

Although there are differences in approach, starting point, emphasis and terminology, both agential realism and pragmatism reject Cartesian dualism in favour of a holistic onto-epistemology—in which knowing is inseparable from transacting/intra-acting-in-the-world. Barad's notion of cultural-material *intra-action* also serves a similar purpose in her philosophy to that of Dewey's concept of *experience* as the organism-environment transaction. Both intra-action and transaction are conceived not as the interaction between separate entities, but rather as dynamic entanglements of inseparable and co-constituting parts of whole situations. Furthermore, Barad's notion of phenomena is similar to both Dewey's notion of mind—as enculturated meanings—and Vygotsky's concept of sociocultural artefacts. It is also possible to see parallels between Peirce's notion of *communities of inquiry* (Bernstein, 2010) and Barad's (1996) *scientific communities* within which scientists make meanings.

Rosiek (2013) also notes strong parallels between Barad's agential realism and pragmatism. Not only do they start with "the logic of measurement and inquiry in the physical sciences," both of them seek to dissolve the "the realism vs. social constructivism binary" (p. 700). Although Dewey elaborates more fully on the implications and consequences of his naturalistic notion of transactional experience—in his far-reaching and comprehensive theories of meaning, knowing and inquiry—it is Barad that perhaps delves more deeply into the phenomenal structure of experience, as *intra-action*. Although both pragmatism and agential realism call for a responsibility in our knowing, that demands a questioning of established boundaries, Rosiek (2013) suggests that Barad goes further than the classical pragmatists "in emphasizing the political dimensions of our ontological entanglements in the past and future" (p. 701), although this is matched by contemporary pragmatists. As such, pragmatism and agential realism are both able to inform each other to provide a thicker shared understanding of our lived experience, within an onto-epistemology of socioculturally-materially situated knowing. Pragmatism is able to offer a comprehensive philosophical framework with which to understand our knowing activity in the world. In turn, agential realism is able to offer useful insights into the phenomenal structure of transactional/intra-actional experience.

Deconstruction

According to Rorty (1982) and Bernstein (2010) poststructuralism addresses many of the same philosophical issues already explored by classical pragmatism. Both poststructuralism and pragmatism offer critiques of Cartesian mind-world dualism and, in their own way, call for the questioning of the underlying cultural and historic dimensions of our knowing. For Dewey, this involves a process of critical or intelligent inquiry into our enculturated intellectual habits, as a way of furthering culture; while for poststructuralists, it primarily involves the interrogation of linguistic meanings. This difference in focus can be explained by their different underlying semiotic understandings (Rosiek, 2013). Poststructuralism is rooted in the dyadic semiotics of Saussurian structuralist linguistics—involving the linguistic sign (words) and the signified—in which words obtain their meaning from how they are used in context. From the Saussurian perspective, linguistic systems are consequently seen as arbitrary. By focusing on language, Saussure ignores non-arbitrary material signs such as "weather vanes, speedometers, photographs, bruises, etc." This ignoring of the materiality of meaning has subsequently been "carried forward into much of post-structuralist sociology and cultural studies" (Rosiek, 2013, p. 694).

In contrast, pragmatism is rooted in Peirce's triadic semiotics—involving the sign, the signified, and the interpretant—as a broader embodied and material theory of signs. "Pierce offered that the operation of signs includes not just the signifier and something signified, but also an implied embodied interpreter whose ability to decode the sign is premised on historicized habits of recognition and response" (Rosiek, 2013, p. 695). In other words, it is based on enculturated habits of meaning. For pragmatism, language is not an independent structure that mediates between the subject and the world. Rather it is a complex set of body-mind habits that are formed and reformed in transactional experience. For Dewey, in particular, language is seen as the connection between reflectively derived essences—as the product of inquiry—and natural existence. "Yet there is a natural bridge that joins the gap between existence and essence; namely communication, language, discourse" (Dewey, as cited in Garrison, 1999, p. 358). In contrast, according to Garrison (1999), Derrida—with his emphasis on language and the text—"shuns naturalism and empiricism; he prefers to stay on the bridge" (1999, p. 358). Without being able to ground essences in experiential existence, Derrida remains trapped in a process of deconstruction of meanings within the confines of language. For Derrida, there is only deconstruction without any

positive reconstruction of the lived world of human experience. Dewey, on the other hand, emphasizes the reconstruction of meanings in relation to sociocultural-material worldly engagement. In Dewey's view, philosophy, as cultural critique, must necessarily begin and return to lived human experience to be of any value.

However, Derrida's process of *deconstruction* is not so much a method, but rather an orientation of openness to what is not present, or *other*. In this regard, it is not something that is done to a text but rather a revealing of what is absent. "Deconstruction problematizes because it constantly points away from itself toward absence and otherness. It welcomes in advance the excluded other" (Garrison, 2003, p. 350). In challenging Western metaphysics, Derrida sets out to deconstruct anything that "presents itself as some kind of cosmic fixed point, eternal truth, or unalterable meaning" (Garrison, 2003, p. 350), which he refers to as the *transcendental signified*. He rejects any fundamental foundation to knowledge and meaning in any form— essence, existence, substance, subject—which he refers to as a *metaphysics of presence*. "There is no beginning or ending in Derrida's world; nor is there a bottom (or top) to Being" (Garrison, 2003, p. 351). For Derrida, even though Heidegger's existentialism explicitly rejects traditional Western metaphysics—and specifically rejects Husserl's transcendental idealism—it merely shifts the foundation from essences to existence (Being). Consequently, for Derrida it is still underpinned by a metaphysics of presence.

Biesta (2013) suggests that the same *metaphysics of presence* criticism can also be levelled at Deweyan pragmatism, and proposes instead a form of *deconstructive pragmaticism* that is itself open to continual deconstruction and reconstruction. However, I am not convinced that the metaphysics of presence is a valid criticism, or even a problem, for existential philosophies—including Heidegger's existentialism. Deweyan pragmatism, as a philosophy of nature, is premised on his concept of eventual existence, in which all existence—and particular existences—are understood as events that temporally unfold. Consequently, as the world is always *in-the-making*, all *beings*—including material-physical objects and living organisms—are rather *becomings*. They are temporally unfolding events. Although all existences are *in-the-world*, living organisms also *act* in-the-world, in order to maintain themselves. In this dynamical organism-environment transaction, the organism adjusts or attunes to their environment in an embodied *knowing* way. It is the success or otherwise of this perspectival knowing activity, in maintaining the functional coordination with the

environment, that determines its validity—rather than the internal logic or coherence of any derived conceptual propositions. In other words, the foundation of all knowing, as an activity, is in worldly embodied engagements, i.e., *experience*.

In contrast, Derrida appears to frame knowledge in purely conceptual language terms—subject to its own internal logical coherence—and ignores the worldly embodied dimensions of knowing. From this perspective, all knowledge and thinking ultimately ends in the paradox that *there is no absolute foundation to knowledge*— which, coincidentally, Dewey would agree with. It is only through its connection back to its worldly consequences that knowing has any relevance and validity—and only then, for that situation. The situated contingent nature of knowing means that it is the situation itself—involving the organism and the environment in dynamical transaction—that is the foundation for the knowing activity. Consequently, no conceptual (intellectualist) absolute foundation is required or implied. All our thinkings, doings, sayings and knowings not only begin and end in existential experience, they *are* experience.

Garrison (1999) summarizes what he perceives to be the similarities and differences between Derrida and Dewey. The similarities "include a shared recognition of the importance of signs, symbols and language, a common rejection of the quest for certainty and the transcendental signified, and, above all, a rejection of the metaphysics of presence" (Garrison, 1999, p. 366). However, there is a clear difference in emphasis and approach between the two. Dewey's theory of inquiry is the examination and reconstruction of knowing within concrete existential situations— involving both symbolic and existential operations. Derrida, on the other hand, focuses mainly on deconstruction within symbolic operations, without any reference to acting-in-the-world. Although, for Dewey, signs and symbols have existential reference, this does not imply that they have an "antecedently existing, eternal, and immutable" foundation (Garrison, 1999, p. 366). Based on Peirce's triadic semiotics, the *known* object is always an interpretant. As such, it "is a construction of inquiry, continuously open to destruction, deconstruction, and reconstruction; it cannot be identified with some transcendental signified" and consequently avoids Derrida's metaphysics of presence (Garrison, 1999, p. 366).

> I affirm Dewey's naturalism, as well as his meliorism. As stated earlier, we live in a world where 99% of all biological essences that have ever existed have been destructed. In such a world, reconstruction is more important than deconstruction

in the cycle of construction, deconstruction (or destruction), and reconstruction. Having arrived at the same destination beyond traditional metaphysics, and travelling together for a way, Dewey and Derrida must eventually part company. If so, I believe that the Deweyan pragmatist should be grateful for their dialogue. (Garrison, 1999, pp. 366–367)

Following Garrison, then, it is the meliorism of Dewey's reconstruction that offers the more complete way of practically resolving the interconnected climate, ecological, economic, technological, social and political crises that the world is currently facing. Derrida does, however, offer ways of problematizing situations—especially in relation to revealing hidden power relations and structures—that are able to complement Deweyan reconstruction. In a similar way, Koopman (2011) offers his *genealogical pragmatism* as a complementary bringing together of Foucault's problematizing-focused genealogy and Dewey's reconstructive pragmatism. "[A] guiding idea for this project is that deep problematization invites sophisticated solutions and that lasting reconstruction requires profound problematics" (Koopman, 2011, p. 558).

Summary / Conclusion

For Dewey, there can be no certainty or absolute foundation to knowing. All concepts, theories, and philosophies—including pragmatism itself—are always open to review and reconstruction in the light of new situations and evidence. Even though, in many ways, the classical pragmatists—Peirce, James, Dewey and Mead—were ahead of their time, there have also been huge societal, technological and intellectual changes and developments since Dewey's death in 1952. Following Schön (1992), these changes and development require, or rather demand, that we do not take Dewey as we find him. Although my general orientation is that Deweyan pragmatism is able to provide the overarching onto-epistemological framing for how human beings live and learn in the world, there is still much to be learned through open dialogue with other perspectives. The perspectives discussed in this chapter: reflective practice, activity theory, phenomenology, enactivism, agential realism and deconstruction, are all able to contribute to a deeper and more nuanced understanding of our existential, lived human experience. In particular, they contribute to a deeper understanding of *how* and *why* we *know* and *learn* within the multiple intersecting and unfolding situations that we encounter as we make our way in-the-world.

From Donald Schön's (1992) study of professional design practitioners, a deeper insight can be gained into the way in which practice—characterized by Schön as a *conversation* with the materials of the situation—involves both the habitual practical wisdom of *knowing-in-action* and the in-the-moment adjustment and attunement of *reflection-in-action*. However, strictly speaking from a Deweyan perspective, these might be thought of rather as *knowing-as-action* and *reflection-as-action*—as different modes of integrated transactional experience, operating across the boundaries of the subpersonal and integrative (living present) timescales. In a similar way, Schön's notion of reflective practice might be better considered not as a discrete level or type of thinking, but rather as taking place over longer narrative timescales.

Vygotsky's *activity theory*, although sharing many similarities with pragmatism as "theories of transformative material activity" (Miettinen, 2006, p. 389) also has some notable differences. Nonetheless, activity theory still offers some useful insights into shared activity systems, as well as useful methodological and conceptual tools such as the *zone of proximal development*. From a pragmatist perspective, in which knowing activity is co-constituted by the body-mind in dynamical transaction with its sociocultural-material environment, the role of mediating sociocultural artefacts was found to be slightly problematic. On the pragmatist view, rather than activity requiring mediation by cultural artifacts, it is seen as the transactional functional coordination involving the interpreting subject, the sign and the signified. As such, cultural artefacts might be better thought of as affordances for action.

In looking at the various phenomenological perspectives of Husserl, Heidegger, Gadamer and Merleau-Ponty, a number of similarities and differences were revealed. Although both Husserl and Dewey based their philosophies on lived experience, Husserl's introspective phenomenology ultimately appeals to a transcendent realm of essences. Heidegger, in rejecting Husserl's transcendental idealism, returns knowing to the ground of practical worldly engagement—with his concept of *ready-to-hand* moving closer to pragmatism. Gadamer, following Heidegger's hermeneutic phenomenology and insight that understanding—embedded in tradition and culture—is the basic mode of being-in-the-world, develops his own hermeneutics, as the *art of understanding*. For Gadamer, *understanding*—drawing on the metaphor of the *fusion of horizons*—always involves pre-understanding, interpretation and application. In this way, Gadamer moves close to both Peirce's triadic semiotics and Dewey's theory of inquiry. Finally, Merleau-Ponty's notions of embodiment and intercorporeality, that

seek to dissolve the mind-world dualism, are strikingly similar to Dewey's holistic concept of body-mind and intersubjective communication. However, despite their similarities and similar rejection of traditional Cartesian dualism, phenomenology and pragmatism are fundamentally very different projects and perspectives. Phenomenology approaches lived experience primarily from a subjective, introspective, or felt, perspective—as revealed *in* consciousness. In contrast, Deweyan pragmatism has a naturalistic empiricist understanding of experience as being both subjective and objective. Introspection and feeling are also important for Dewey, but as integrated modes of experience, rather than providing a sole foundation.

Enactivism is a *philosophy of nature* that draws primarily on Merleau-Ponty's phenomenology of embodiment and evolutionary biology to (re)interpret contemporary cognitive science in terms of non-representational, embodied and enactive cognition. Notwithstanding their different vocabularies, enactivism and Deweyan pragmatism both share a similar view of cognition (enactivism)/experience (Dewey) in terms of skilled embodied worldly engagement—as the dynamical interaction/transaction between organisms and their sociocultural-material environment. Although enactivism and pragmatism have different backgrounds, they can both provide extensive resources for, and inform, each other. Pragmatism is able to provide enactivism with a broad and comprehensive overarching philosophical framework that can dissolve the walls between embedded, enactive, extended and embodied theories within a unified onto-epistemology of situated *knowing-in-transacting*. Enactivism, on the other hand, is able to provide and inform pragmatist perspectives with richer contemporary neuroscience, dynamical systems and anthropological accounts of our lived worldly engagements.

As part of what has been called the *new materialism*, Karen Barad's *agential realism* also has similarities to pragmatism. Based on Bohr's *philosophy-physics*, Barad develops an onto-epistemological framework in which the *object* of observation and the *agencies* of observation form an inseparable nondualistic whole. For agential realism, all knowledge claims are socioculturally and materially situated with *phenomena* (objects)—understood in terms of material-cultural *intra-actions* or *entanglements,* with fluid boundaries that are subject to critical interrogation and that call for an *ethics of knowing*. Although pragmatism provides a more comprehensive theory of knowing, agential realism—with its emphasis on the phenomenal structure of

intra-action—is able to add a further depth to Dewey's notion of transactional experience.

Derrida sets out to shake the foundations of metaphysics and decenter *knowing*. Ultimately, however, he gets caught up in what Dewey would describe as an *intellectualist fallacy*. By privileging linguistic meanings and their operations over existential meanings and operations, Derrida is unable to find his way back to lived worldly experience. In other words, deconstruction without reconstruction. On the other hand, for Dewey, everything begins and ends in experience. Language use and thinking, although essential modes of human experience, are nonetheless integrated functional processes in our worldly engagements. However, that is not to say that there is no value in Derrida's notion of deconstruction. It does point to a way of interrogating hidden ideological power structures and narratives and being open to what is other. In this way, it is able to provide valuable resources for critiquing existing sociocultural practices and norms. However, in order to affect concrete political and societal change, deconstruction needs to brought back to the reconstruction of our lived worldly experience.

By bringing together these insights—from pragmatism, reflective practice, activity theory, phenomenology, enactivism, agential realism and deconstruction—the walls between them are dissolved to gain a more nuanced and multidimensional understanding of dynamic and fluid *knowing* and *learning—as* and *in* lived human experience. By listening to what each perspective has to say, there is a fusion of horizons, and what emerges is a thicker *pragmatist-enactivist onto-epistemology* of situated knowing as a *skillful transacting-in-the-world*. By dissolving the walls between ontology and epistemology in this way, both the perspectival *knowing* of individual body-minds, and collective sociocultural *bodies of knowledge*—understood in terms of intersubjective sociocultural artifacts and other people—are able to be accounted for. *Learning*, then, can be thought of from this *pragmatist-enactivist* perspective as the formation, reformation and transformation of skillful body-mind habits, through dynamical transactional experience within rich, multi-layered sociocultural-material environments. These include intersubjective, intercorporeal and interaffective engagements with both other people and sociocultural artifacts. As such, *knowing* and *learning* are always situated and contingent. Furthermore, as living involves moving through, and within, a continuum of dynamically unfolding situations, knowing and learning are also continuous with life.

This, then, also concludes *Part One*. Having established a general pragmatist-enactivist onto-epistemology, the proposition is to now use this as an overarching frame within which to further explore and understand learning situations themselves—as they unfold in practice. In this, I follow Dewey's call for philosophy to always return to worldly experience, in order to make practical a difference in the world.

Part Two

Developing a Proposition for a Nomadic Agile Learning Approach

In *Part Two*, then, having put forward a proposition for a pragmatist-enactivist onto-epistemology framing for agile learning—that dissolves the objectivist-constructivist dichotomy—I now return to the practical pedagogical problematic. This then serves as the starting point for developing a proposition for a *nomadic agile learning approach* that moves beyond the constraints of educational institutions and qualification frameworks. Generally, *Part Two* follows a process of Deweyan inquiry. It starts with the practical pedagogical problematic that I experienced in my own teaching practice, while applying an agile learning approach in a graduate diploma of creative technologies. This problematic situation, as I initially understood it—involving tensions and contradictions between the agile approach and traditional educational structures—is outlined in *Chapter 5*. From this emerges an initial tentative, or speculative, proposition for a nomadic agile approach. However, as pragmatism does not advocate any concrete research approaches, I take a bespoke mixed approach involving a *toolkit* of research and design approaches. These are outlined in *Chapter 4* and include *expansive learning*, *soft systems methodology*, *expansive learning*, *design thinking/practice, agile development* and *the lean startup methodology.* Using the tentative proposition as a form of prototype, to explore and find out more about the problematic situation, I set out to collect the perspectives of the other participants involved in the relevant learning and work activities. This is done through a series of informal and semi-formal discussions with former students, teaching colleagues and domain employers. The discussions and perspectives are outlined and summarized in *Chapter 6*. The collected perspectives are then discussed in more depth in *Chapter 7*—in relation to the tentative proposition, my own interpretive understanding and the pragmatist-enactivist onto-epistemology. These discussions are organized around four main themes that relate to the purpose(s) of the learning, what needs to be

learned, how it is learned, and possible contexts. In *Chapter 8*, the various discussion strands are then pulled together in a more fleshed-out and refined proposition for a nomadic agile learning approach.

However, the refined proposition is not a proposal or plan, as such, that can be implemented in a top-down way in practice. Rather, it is an invitation to an open conversation about possible ways of approaching learning situations outside the constraints of institutions and qualifications. Specific learning situations emerge from the ground up through open participatory conversations and activities—involving learners, teachers, practitioners and workplaces—in which they all learn together. In this way, traditional boundaries or walls between learning and work activities are dissolved within a continuum of potential and emergent learning-practice situations, within the wider domain of practice.

Chapter 4

The Inquiry Approach

Generally, this research sits within a pragmatist interpretive paradigm and follows a Deweyan process of inquiry (*see Figure 3, Chapter 2*). It starts with a problematic situation that I experienced in my own teaching practice while applying an agile learning approach in a graduate diploma of creative technologies. At the core of the situation were the contradictions and tensions I experienced, operating within the constraints of an educational institution and qualification framework. In response to this, I formulated a tentative proposition for a *nomadic* agile approach that moves beyond institutions and qualifications and out into the wider domain of practice. The tentative proposition is then used as the basis for further exploration, finding out and discussion about the problematic situation. This in turn leads to a more fleshed out and refined proposition. Although Deweyan inquiry ultimately leads back to practice, for the testing of conceptual propositions—which was my initial aim—this ended up not being feasible within the timeframe and budget of this inquiry. Nevertheless, I am still interested in pursuing further opportunities for application in the future, possibly in the form of a further pilot research programme.

As a pragmatist educational inquiry, the main purpose of this research is to advance understandings about and within teaching and learning practice. According to Biesta & Burbules (2003), Dewey saw educational practice as being at the center of all educational inquiry—providing not only the source of the research problems and subject matter but also the final test in action of the conclusions (p. 79). Schön (1992) also calls for educational research to be focused on practical relevancy, based on teachers' own practical experience and understandings—rather than theoretical knowledge and pedagogical advice being handed down to practicing teachers from academic researchers. For Schön, this represents what he calls the "dilemma of rigor or relevance" (1992, p. 120).

> [In the field of education], where professors in the schools and teachers in the schools tend to accept the research university's claim to a monopoly on the generation of new practice knowledge, packages of knowledge, in the form of curricular materials and pedagogical advice, are handed down to practicing teachers… Students tend to be disconnected from their commonplace understandings and competences built up in their ordinary commerce with the world. Teachers, likewise, tend to be disconnected from what they know… [T]heir descriptions of their own teaching bear little resemblance to the knowledge they actually reveal when they teach well. Teachers are cut off, then, both from the possibility of reflecting and building on their own know-how and from the confusions that could serve them as springboards to new ways of seeing… (Schön, 1992, pp. 120–121)

Following Schön (1992), then, this inquiry starts with reflecting and building on my own practical teaching know-how and confusions "as springboards to new ways of seeing" (p. 121). However, although my reflections might be considered to be my own interpretation, they are not wholly subjective. Rather, they are partially shaped by both my own experience and through discourse with other people within the various teacher, student and practitioner communities that I am part of (Rosiek & Aitkinson, 2005). What might be referred to as my *practical teaching wisdom* is grounded in my lived teaching experience(s), as well as informed by my philosophical explorations. From a Deweyan perspective, my experience is both objective and subjective, with my theorizing being a deeply integrated part of my practice.

Rosiek & Aitkinson (2005) appeal to Peirce's triadic semiotic theory in making their case for the lived practical experience of teachers to be regarded as "a potential source of novel and significant knowledge" (p. 438). Peirce's triadic semiotics, in contrast to Saussure's dyadic semiotics involving just the sign and the signified, also includes the *interpretant*. For Peirce, the interpretant is the sign as understood, or interpreted, by the subjective interpreter. As the interpreter is both practically engaged in the world and enculturated within various communities—including communities of inquiry and communities of practice—interpreted meanings can be said to be both objectively and subjectively constituted.

> Respect for teachers' practical experience as a source of unique knowledge means committing to the idea that there is some part of the reality of teaching that teachers have access to in their daily practice that is not available through other means of inquiry. Peirce's mediated realism can serve this purpose. In it, the difference between a teacher's expectations and classroom reality is encountered at a phenomenal level, as brute existence that manifests unexpected qualities of experience which require interpretation. This interpretation has no source of

validation but through continued experience of some kind. (Rosiek & Aitkinson, 2005, p. 437)

Furthermore, teachers are enculturated within the institutions and professional communities that they are part of, which enable their complex understandings and teaching practices. Teaching and academic norms, as well as communal habits, provide the sociocultural background for teachers' habits of interpretation—which both constrain and enable possibilities for transformation. "A pragmatic semiotic approach to teacher knowledge inquiry makes this simultaneous enablement and constraint explicit. Such an approach offers what we call *practical reflexivity* — a disciplined recognition that claims to practical knowledge are both realistic and discursively contingent" (Rosiek & Aitkinson, 2005, p. 440).

However, as a general theory of knowing, pragmatism does not propose any specific educational research programs or provide any specific research methods. Rather, it takes a more open, pluralistic approach. According to Biesta & Burbules (2003), what pragmatism does offer educational research is a unique "understanding of knowledge as a function of and for human action, and an understanding of human interaction and communication in thoroughly practical terms" (p. 107). It also offers specific ways of understanding the possibilities and constraints of educational research. As such, pragmatism calls for "multiple tools of inquiry to gain different perspectives on the problem at hand" (p. 108). For this inquiry, then, rather than strictly following a particular methodology, I take a hybrid custom approach that is informed by a number of similar and related approaches that are consistent with Deweyan inquiry. From third-generation activity theory (Engeström & Sannino, 2010) comes the *expansive learning* approach, involving *formative interventions* and *change laboratories*. *Soft systems methodology* (Checkland & Poulter, 2010) provides a systematic approach to investigating messy and complex human situations. *Design practice* (as a reworking of *design thinking*) is informed by *designerly ways of knowing* (Cross, 2006) and *reflective practice* (Schön, 1992). It offers a solution-led approach to exploring and improving complex ill-defined (wicked) problems. Finally, *agile development* and *lean startup* approaches provide iterative and flexible ways of approaching new products and services. These are now outlined and discussed in more detail (below), and then brought together again, within the context of the unfolding inquiry, at the end of the Chapter.

Third Generation Activity Theory

Third-generation activity theory builds on, and moves beyond, the limitations of Vygotsky's first-generation and Leont'ev's second-generation activity theories. According to Engeström (2001), Vygotsky's and Leont'ev's theories focused primarily on vertical psychological development and were also insensitive to cultural diversity. Since the 1970s, activity theory has been further developed by a third generation of researchers in the West—including Yrjö Engeström—who have subsequently developed new "conceptual tools to understand dialogue, multiple perspectives, and networks of interacting activity systems" (Engeström, 2001, p. 135). In particular, third-generation activity theory moves beyond Leont'ev's analysis of single activity systems—involving multiple interacting participants—to multiple activity systems understood in their networked relations. In their commitment to open dialogue with other perspectives, third-generation theorists have also engaged in conversations with other traditions. Engeström et al. (1999) emphasize the "nondogmatic nature of the current [third-generation] phase of discussion and collaboration in activity theory" in its "multifaceted search for connections and hybrids between activity theory and other traditions" (p. 2). In relation to pragmatism, for example, as already mentioned, Miettinen (2006) suggests that activity theory and Deweyan pragmatism share a family resemblance as "theories of transformative material activity" (p. 389) that make it possible to solve the philosophical dilemma of subject-object dualism. From the pragmatist perspective—notwithstanding the implied dualism Garrison (2001) believes can be found in Vygotsky's and Leont'ev's theories—Garrison (1995) suggests that pragmatism is able to provide the appropriate epistemological framing for activity theory.

According to Engeström (2001), there are five core principles of third generation activity theory. Firstly, rather than the primary unit of analysis being a single artifact-mediated and object-orientated activity system, as with Leont'ev, it is the collection of multiple interacting activity systems. Secondly, activity systems are seen as diverse communities containing multiple voices, points of view, traditions and interests. These can potentially be the source of both problems and innovation. The third principle is that activity systems are shaped and transformed over potentially long periods of time and therefore need to be understood in relation to their histories. Fourthly, contradictions and tensions, both within and between activity systems, are seen as the primary starting point for potential change and development. The final principle is

the possibility of expansive transformations of activity systems, whereby they are able to be reconceptualized in response to expanded horizons of possibilities. In this way the expansive learning cycle can be seen as a collective journey through the *zone of proximal development* of the activity system.
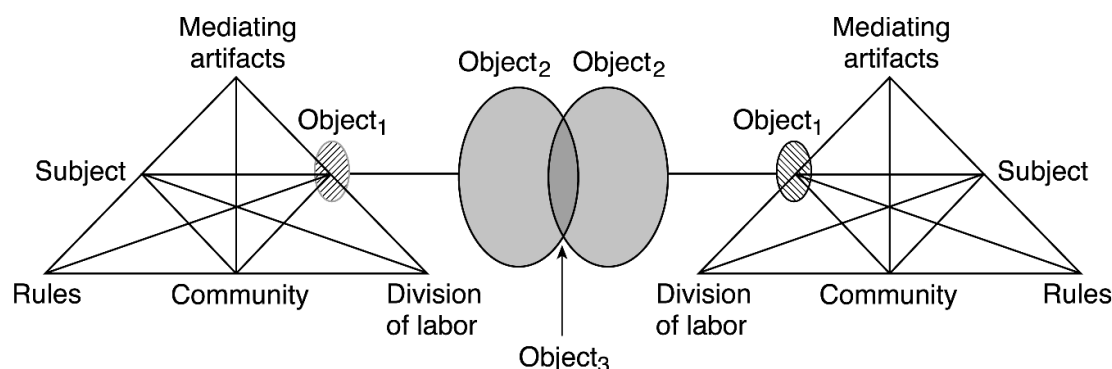

Figure 6. Two interacting activity systems as a minimal model for the third generation of activity theory, in which the object of the activities moves from an initial 'raw' state (object 1) to a collectively meaningful object constructed by the activity system (object 2), and potentially to a jointly constructed new shared object (object 3). Adapted from "Expansive Learning at Work: Toward an Activity Theoretical Reconceptualization" by Y. Engeström, 2001, *Journal of Education and Work*, *14*(1), p. 136.

In relation to this inquiry into agile learning situations, there are a number of intersecting activity systems. Firstly, there is the learning course involving students, teachers and academic managers. This in turn sits within the wider institutional activity system involving support, admissions and marketing staff, etc., as well as higher level organizational managers, all of whom also participate in their own primary activity systems within the institutional activity system. Students and teachers within the learning activity system are also participants in the wider domain of practice activity system—that also involves multiple individual workplace and individual project activity systems. All of these interacting activity systems also contain multiple collective and individual points-of-view, traditions and interests—all with their own embedded histories and cultures—that need to be considered, listened to, and negotiated, in order to affect change and improvement. In such a complex interwovenness of people and activities, there are potential tensions and contradictions at almost every turn and level—from interactions between individuals to cultural and ideological differences between activity systems. For third-generation activity theory, however, it is precisely

these tensions and contradictions that provide the opportunity and impetus to reevaluate and transform practices in an ongoing expansive process of learning.
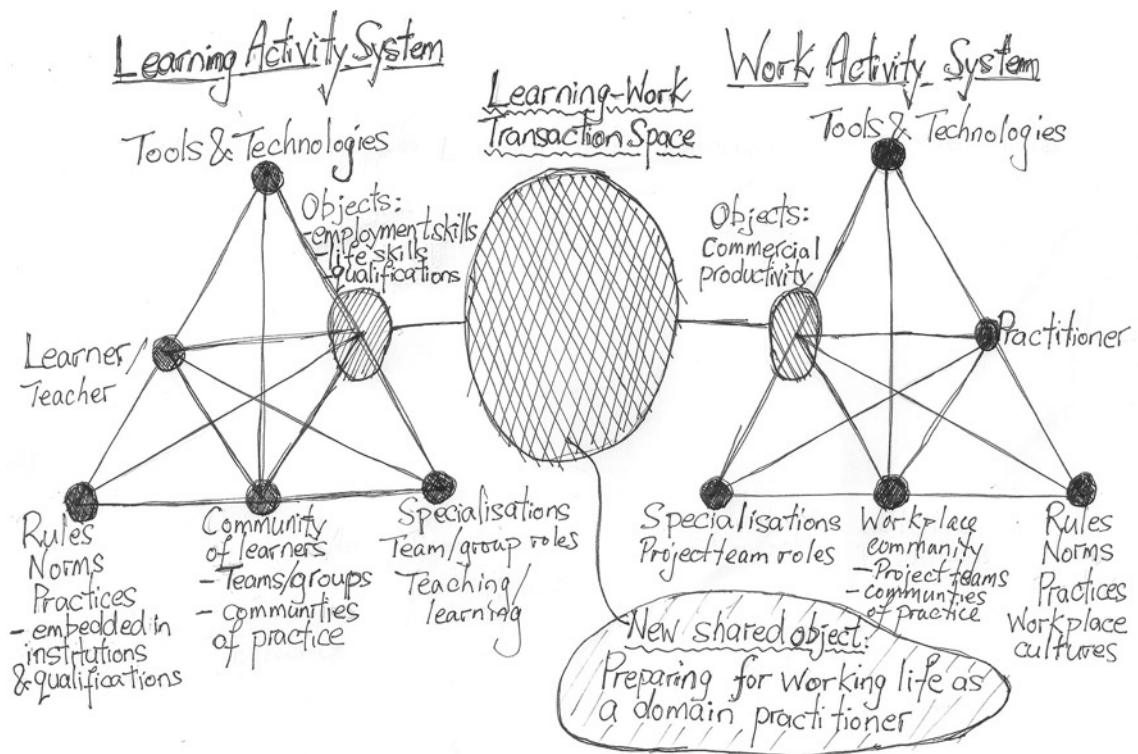
Figure 7. An example of how interacting learning and work activity systems can be interpreted as a *learning-work transaction space* with a potentially jointly constructed new shared object of *preparing learners for working life as domain practitioners* (see *Chapter 7* for further discussion in relation to the shared purposes of nomadic agile learning courses).

Expansive learning (Engeström, 1987) refers to the learning, change and development within and across multiple interacting activity systems—in response to structural contradictions and tensions. In these situations, what is being learned cannot be defined in advance. Rather, it emerges simultaneously with the creation and transformation of activities and practices (Engeström, 2001). In relation to this inquiry, expansive learning is able to provide a useful perspective and framework for understanding the *transaction space* (McMillan et al., 2016)—across and between learning and work activities—within which new shared activities and practices can emerge. It can also provide an understanding of situated student learning across multiple learning-practice contexts, whereby their learning cannot be defined in advance.

People and organizations are all the time learning something that is not stable, not even defined or understood ahead of time. In important transformations of our personal lives and organizational practices, we must learn new forms of activity which are not yet there. They are literally learned as they are being created. (Engeström, 2001, p. 138)
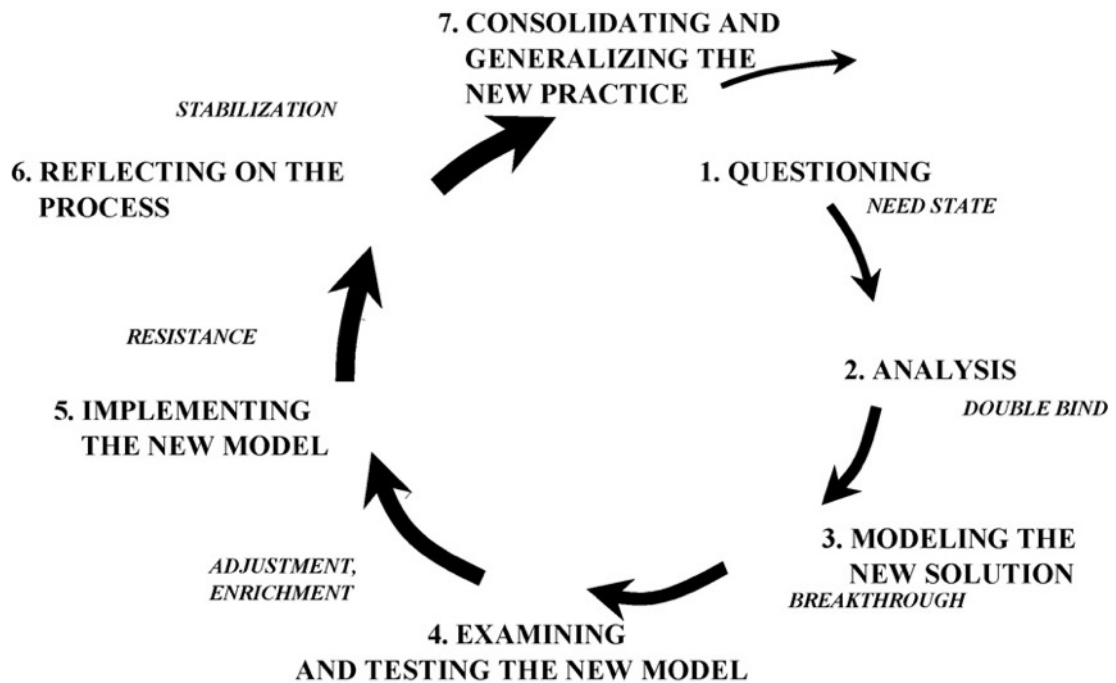
Figure 8. Sequence of learning actions in an expansive learning cycle. Adapted from "Studies of Expansive Learning: Foundations, Findings and Future Challenges," by Y. Engeström & A. Sannino, 2010, *Educational Research Review, 5*(1), p. 8.

The idea that contradictions and tensions, within and between activity systems, can serve as the starting point for expansive transformations is informed by Gregory Bateson's theory of learning, from 1972 (Engeström, 2001). In his learning theory, Bateson defines three levels of learning. *Learning I* is the learning of conditioned responses within a particular context, while *Learning II* is the development of a deeper and more nuanced understanding of the rules, norms and patterns of the context itself. However, when contradictions and tensions occur between Learning I and Learning II, a *double bind* is created that can potentially lead to *Learning III*. This happens when "a person or group begins to radically question the sense and meaning of the context and to construct a wider alternative context" (Engeström, 2001, p. 138). Expansive learning is the further development of Learning III into a systematic framework for the transformation of activity systems. For Engeström & Sannino (2010), expansive learning has three main characteristics. Firstly, it "transforms and creates

culture" (p. 2), rather than simply transmitting and preserving. Secondly, it is a horizontal process of transformation rather than simply a process of vertical improvement. Thirdly, it leads to the formation of theories and concepts, rather than the acquisition or creation of empirical knowledge. "The core idea is qualitatively different from both acquisition and participation…learners construct a new object and concept for their collective activity and implement this new object and concept in practice" (Engeström & Sannino, 2010, p. 2).

In relation to the learning actions in *Figure 8*, the first action involves *questioning* or criticizing existing practices. The second action involves *analyzing* the situation reflectively, discursively and practically in order to uncover possible underlying causes and mechanisms. Types of analysis include *historical-genetic* explanations of the origins and evolution of particular activity systems, and *actual-empirical* analysis of their inner systemic workings. The third action involves *modeling* possible new solutions in a tangible form that can be shown and communicated publicly. The fourth action is one of *examining* or *testing* the model through experimentation, to gain a better understanding of its "dynamics, potentials and limitations." The fifth action involves *implementing* the model in actual practice contexts—possibly as a limited pilot programme. Actions six and seven involve *reflecting* on and evaluating how the model performed in practice, and *consolidating* it as a new stable practice (Engeström & Sannino, 2010, p. 7).

> The ultimate test of any learning theory is how it helps us to generate learning that penetrates and grasps pressing issues the humankind is facing today and tomorrow. The theory of expansive learning currently expands its analysis both up and down, outward and inward. Moving up and outward, it tackles learning in fields or networks of interconnected activity systems with their partially shared and often contested objects. Moving down and inward, it tackles issues of subjectivity, experiencing, personal sense, emotion, embodiment, identity, and moral commitment. (Engeström & Sannino, 2010, p. 21)

There are some obvious similarities between Engeström's expansive learning and Dewey's theory of inquiry. Both are dynamical action-orientated processes that are initiated when existing practices no longer work. They also both involve initially developing a model or hypothesis through analysis and reflection, and then implementing it in practice to test whether it works. However, they differ in their focus. In expansive learning, the unit of analysis is the collective activity system and the consolidation of new practices as collective objects of knowledge. "Expansive

learning is manifested primarily as changes in the object of the collective activity…this eventually leads to a qualitative transformation of all components of the activity system" (Engeström & Sannino, 2010, p. 8). In Dewey's theory of inquiry, the emphasis is rather on how the individual human organism learns through their transaction with their sociocultural-material environment—with the outcome being a new concept or habit formed, or transformed, in the individual body-mind. The other difference is that Dewey's theory of inquiry is not envisaged as a learning or thinking methodology, but rather as a naturalistic empirical account of how people actually learn and think. In contrast, expansive learning is proposed by Engeström as a methodology for transforming collective activity systems. In order to establish expansive learning as a methodology that is consistent with Deweyan pragmatism, the activity theory notion of collective knowledge (practices, concepts and theories, etc.) needs to be firstly reconciled with Dewey's theory of knowing.

As discussed earlier, according to Garrison (2001), there appears to be an underlying dualism in the earlier activity theory of Vygotsky and Leont'ev—between the *internal* socio-enculturated mind and the *external* sociocultural artefacts (*see Chapter 3*). This is also still present to a certain extent in third-generation activity theory. With its focus on collective practices, for example, a particular issue for expansive learning is that it does not sufficiently consider individual subjective practices and agency (Engeström & Sannino, 2010). Nevertheless, consistent with both Deweyan pragmatism and contemporary enactivism, internal knowing and external knowledge can be resolved though the concept of habits—which are formed and reformed in the dynamical transaction between the body-mind human organism and its sociocultural-material environment. On this view, individual knowing is seen as the enaction and attunement of habitual predispositions *in* action. Garrison (2001) describes this process of situated adjustment and attunement as one of functional coordination between the organism and the environment. This includes the intersubjective functional coordination with other individual body-minds in collective activities and practices. For Dewey, shared intersubjective knowledge and practices emerge through communication—in the coordination of joint activity—but do not exist, as such, in an external realm as objective knowledge. In this way, intersubjective *knowledge*—in a similar way to individual knowing—can also be thought of as an emergent situated *knowing* that is co-constituted by the individual knowing of the participants, in transaction with each other and with their sociocultural-material environment. However, the collective, or shared, knowing does not entail that each individual subject has exactly the same

understanding, or that there is any objective *right* understanding. Rather, following Pierce's triadic semiotics, individual meanings are always interpreted meanings. As such, collective understandings are perhaps better seen as the functional coordination of a collection of interpreted understandings. In this way, it might be more appropriate to refer to the collective practices and concepts resulting from expansive learning as intersubjective *coordinations* rather than being *shared*.

In addition to pragmatism potentially being able to provide a non-dualist underpinning onto-epistemology for third-generation activity theory (Garrison, 1995, 2001), expansive learning can also potentially inform pragmatism. For Miettinen et al. (2012), expansive learning provides a fuller account of collective learning within group activity contexts that can augment Dewey's theory of communication. Taken together, Engeström's expansive learning and Dewey's theories of body-mind, communication, knowing and inquiry are able to account for both the dynamical transformation of the sociocultural-material activity system, and the dynamical transformation of the individual body-mind—as an integrated functional part.

As well as expansive learning providing a conceptual account of shared learning within activity systems, it also offers a concrete, action research methodology in which researchers purposefully intervene in problematic situations in order to improve them. According to Engeström & Sannino (2010), these *formative interventions* differ radically from traditional, linear, controlled experiments in four main ways. Firstly, as the interventions start with the contradictions and tensions faced by the participants in the situation, the contents and goals of the research are not known in advance. Rather, they are revealed through modelling and analysis. Secondly, the process and contents of formative interventions are negotiated and ultimately determined by the subjects, who "gain agency and take charge of the process." Thirdly, the resulting concepts in formative interventions are specific to that situation—although they can be used in other situations "as frames for the design on locally appropriate new solutions." Fourthly*,* rather than attempting to take control of all the variables of the situation, "the researcher aims at provoking and sustaining an expansive transformation process led and owned by the practitioners" (Engeström & Sannino, 2010, p. 15).

Again, there is a strong alignment with Dewey's theory of inquiry, in which the path, form and results cannot be known in advance but rather emerge through the process.

Consequently, genuine inquiry is always inherently risky and necessarily requires openness and a sense of adventure into the unknown. "Every thinker puts some portion of an apparently stable world in peril and no one can wholly predict what will emerge in its place" (Dewey, 1929, p. 222). The negotiated nature of formative interventions can be understood in terms of Dewey's theory of communication, in which new, shared understandings and practices emerge through discourse and the coordination of shared activities. This too requires an openness to, and respect for, the perspectives of others. As such, not only do new, coordinated practices and concepts emerge, but each individual is also changed and regulated in some way. "The significant consideration is that assemblage of organic human beings transforms sequence and coexistence into participation" (Dewey, 1929, p. 175). For both Deweyan inquiry and formative interventions, the resulting concepts are situation specific and cannot necessarily be generalized and applied to other situations. For both approaches, concepts and practices can be used as tools, or experimental frames, to understand other similar situations.

Expansive learning also provides the concepts of *boundary crossing* and *knotworking* as ways of understanding processes across the boundaries of activity systems. Boundary crossing refers to the active process of practitioner network building across activity systems, and is defined by Engeström, Engeström & Kärkkäinen (1995, pp. 332–333) as "horizontal expertise where practitioners must move across boundaries to seek and give help, to find information and tools wherever they happen to be available." As such, it "entails stepping into unfamiliar domains" and involves "collective concept formation" (Engeström & Sannino, 2010, p. 12). *Knotworking* refers to the emerging modes of collaboration involved between boundary-crossing practitioners.

> The notion of the knot refers to rapidly pulsating, distributed and partially improvised orchestration of collaborative performance between otherwise loosely connected actors and activity systems…Knotworking is characterized by pulsating movement of tying, untying and retying together otherwise separate threads of activity. The tying and dissolution of a knot of collaborative work is not reducible to any specific individual or fixed organizational entity as the center of control. The center does not hold. The locus of initiative changes from moment to moment within a Knotworking sequence. (Engeström, Engeström, & Vähäaho, 1999, pp. 346-347)

The *change laboratory* is used as a practical way to approach transformative interventions, and involves setting up a *pilot unit* within an organization undergoing

transformation. It is conceived "as a microcosm in which potential new ways of working can be experienced and experimented with" (Engeström & Sannino, 2009, p. 15). Change laboratories are particularly useful in activity systems undergoing major transformation, as they allow for testing models and concepts on a small, isolated scale, as a kind of prototype. They usually involve a small group of practitioners and local managers working collaboratively with the interventionist-researchers. They can also operate across boundaries "with representatives from two or more activity systems engaged in collaboration or partnership" (Engeström & Sannino, 2010, p. 15).

In relation to this inquiry, the idea of the researcher intervening formatively in the activity system(s) is consistent with the general pragmatist approach to education research through education practice. Although I might be the primary intervening researcher, the other participants—teaching colleagues, students, practitioners and employers—as co-constituents in the activities, can also be considered to be co-researchers. Furthermore, the whole trajectory and unfolding of this inquiry—starting with the development of my original agile learning proposal—can be seen as a continuum of multiple, intertwined, expansive learning cycles responding to emergent tensions and contradictions on multiple levels and modes. Expansive learning also offers potential ways of understanding specific teaching and learning activities in terms of *knots*, that form across the boundaries of formal learning and work activities within the wider domain of practice—in other words, as "rapidly pulsating, distributed and partially improvised" collaborations involving teachers, students, practitioners and employers (Engeström, Engeström & Vähäaho, 1999, p. 346). From this perspective, it is not only teachers, but also students, practitioners, and employers that can be considered to be boundary-crossing knotworkers. Finally, the concept of the change laboratory provides a concrete methodology for implementing, testing and refining potential new practices on a small scale, as prototypes.

Soft Systems Methodology

According to Checkland & Poulter (2010), soft systems methodology (SSM) is an action-oriented process of inquiry for finding out about and taking action to improve problematic, messy human situations. In particular, it offers a structured way of approaching complex, problematic social situations involving multiple interacting and conflicting perspectives. Conceived primarily as an iterative learning cycle, SSM

generally involves four main activities (*see Figure 9*). The first activity involves *finding out* about problematic situations though collecting the perspectives of the various participants. In the second activity, models are created to represent the purposeful human activities from the different perspectives. The third activity involves using the models as the basis for further discussions with the participants about how to improve the situation. Based on these discussions, the fourth activity involves proposing action to improve the problematic situation that is both desirable and feasible. At the end of the SSM learning cycle, the proposal is then implemented in practice and the cycle begins again (Checkland, 2000; Checkland & Poulter, 2010).
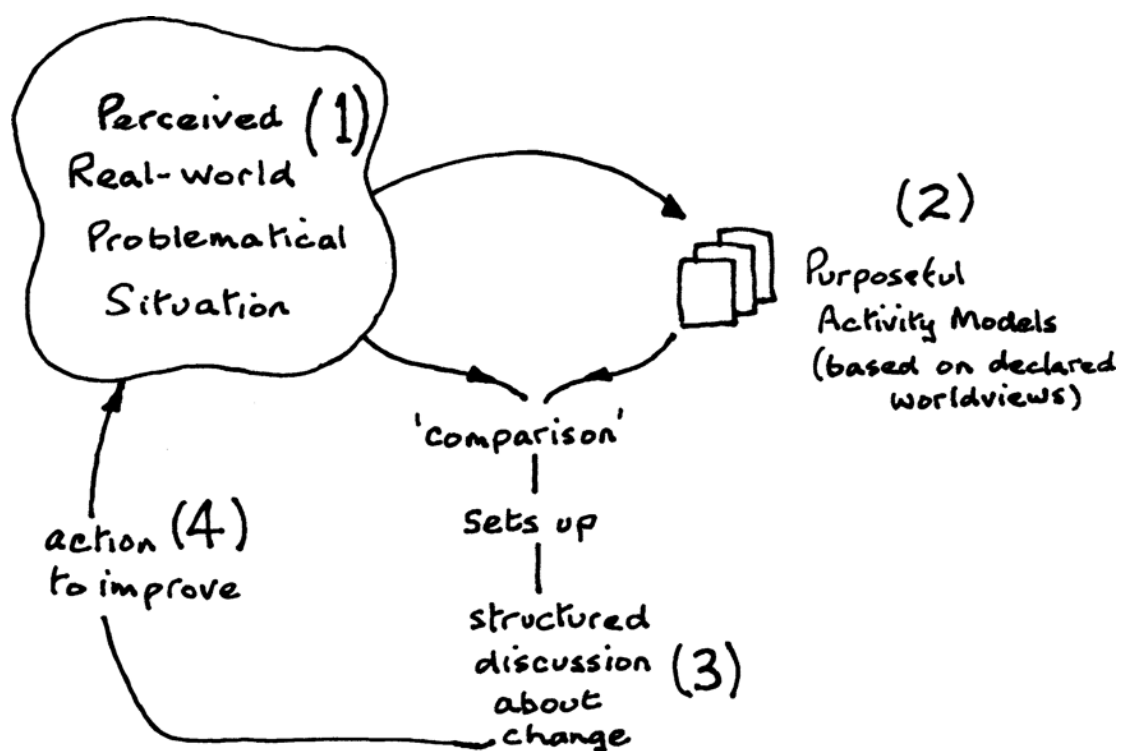
Figure 9. The iconic model of the SSM learning cycle. Adapted from *Systems Approaches to Managing Change: A Practical Guide* (p. 207), edited by M. Reynolds & S. Holwell, 2010, London, United Kingdom: Springer Verlag.

However, the SSM cycle does not necessarily proceed in a neat prescribed order, but can jump around between activities, as well as include multiple nested sub-cycles. In a similar fashion to Engeström's expansive learning cycle, the SSM learning cycle is conceived as a group process that leads to collective learning and, as such, is best carried out by the people in the situation rather than by an external expert. As with formative interventions, SSM also aligns with the pragmatist perspective that educational practitioners should be the ones undertaking educational research. It also

allows for a wider group of potential researchers that might include teachers, students, practitioners and employers. Not only does SSM offer a practical methodological framework, it also considers sociocultural and power relations within complex human situations. It should also be pointed out that the term *systems* in SSM does not refer to the activities, or situation, being inquired into. Rather, it refers to the systematic approach being taken to inquire into the problematic situation.

The first main activity, *finding out*, initially involves collecting information and perspectives about the problematic situation, and then drawing diagrams as a way of representing the complexity of relationships within the situation—as well as possible ways of improving it, from the different relevant perspectives. These *models* are used as tools to think with and are subsequently used to structure further discussions and debate. In the initial finding out phase, Checkland & Poulter (2010) recommend using three *analyses* to guide the process. *Analysis One* focuses on the intervention itself and involves identifying the roles of *client*, *practitioner* and *owner*. The client is the person or group causing the intervention, the practitioner is the person undertaking the investigation, and the owner(s) are all those affected by the situation and concerned with improving it (Checkland & Poulter, 2010). Although, for this research, I might be considered to be the primary client *and* the primary practitioner—as the person initiating and conducting the inquiry—there are also potentially other clients, such as students, other teachers, employers and educational institutions, that co-enable and participate in the research. The list of owners might include teachers, students, domain practitioners, employers, educational institutions, NZQA and possibly educational policy makers.

Analysis Two is concerned with the sociocultural nature of the complex situation, in which motivations for human action often lie in cultural norms and emotions, rather than strictly in the logic of the situation. It is a way of understanding the collective culture of the situation above the level of individual worldviews. Specifically, it involves analysing the dynamic relationship between *roles*, *norms* and *values*. Roles designate the formal and informal social positions, norms are the behaviours expected of the people within the roles, and values are criteria or standards that the behaviours of the people performing the roles are judged against. *Analysis Three* looks at the political and power relations within the situation, and is closely linked to *Analysis Two*—as power is often embodied in a particular role. Politics refers to the way in which

different interests and worldviews are accommodated in order to maintain the coherency of situations and organizations over time.

The second main activity in SSM involves making purposeful activity models. These are pictorial representations of purposeful human activities from the perspectives of the different worldviews, determined in the finding out stage. Each model represents a single perspective from a declared worldview, and they are used as devices to organize the inquiry and structure further questioning, discussion and debate about the situation (Checkland & Poulter, 2010). Relevant perspectives for this research are other teachers, students, domain practitioners, employers and educational institutions. When creating activity models, Checkland & Poulter (2010, p. 218) suggest that it is helpful to begin with expressing the *root definition* of the activity as a process of transformation (T) in the form of *do P by Q in order to help achieve R*, where P stands for what, Q for how and R for why. They also recommend defining each of the elements in the mnemonic *CATWOE*, where C stands for the customers— as the beneficiaries or victim of the activity system; A stands for the actors who do the activities; T stands for the transformation; W stands for the declared worldview; O stands for the owners—who could stop or change the activity; and E stands for the environmental constraints (p. 219).

In the third main activity, the purposeful activity models are then used to help structure discussions and ask further questions of the situation. The ultimate purpose of the structured discussions is to seek an accommodation among the group of relevant participants in the situation—in other words, to find both a desirable and feasible improved version of the situation that all the various perspectives can live with. As such, Checkland & Poulter (2010) recommend dividing the proposal for action-to-improve into three sections: changes to be made to structures, changes to be made to processes or procedures, and changes or shifts to be made to attitudes.

As already mentioned, as an iterative action-research approach that starts with a problematic situation, SSM shares a number of similarities with the expansive learning cycle involving formative interventions. Although SSM does not articulate an underpinning epistemological position, it is broadly consistent with Deweyan pragmatism—in that it seeks to make a practical difference through improving real-world situations. Although SSM does not seem to necessarily provide an account of what constitutes a problematic situation, or how a situation becomes problematized, it

does provide some useful methods and tools for revealing the particular conditions of the problematic situation. These include collecting perspectives through semi-formal discussions, drawing diagrams (models) and accommodating multiple perspectives. As such, it is able to complement formative interventions through providing specific, concrete methods. In relation to this inquiry, for example, I held a series of semi-formal discussions with former students, teaching colleagues and employers, as a way of collecting their different perspectives. I have also found that drawing diagrams in an SSM style is useful way of representing and communicating processes and activities.

Interactive Design Approaches

The approach to this inquiry has also been influenced by approaches and methodologies used in the interactive design and development field—in which I teach and have worked. While not strictly academic research methodologies, they can nonetheless contribute to a leaner agile inquiry that aligns with both expansive and SSM learning cycles, as well as Deweyan inquiry. These are *design thinking*, which I rework from a pragmatist-enactivist perspective as *design practice, agile development* and the *lean startup methodology.*
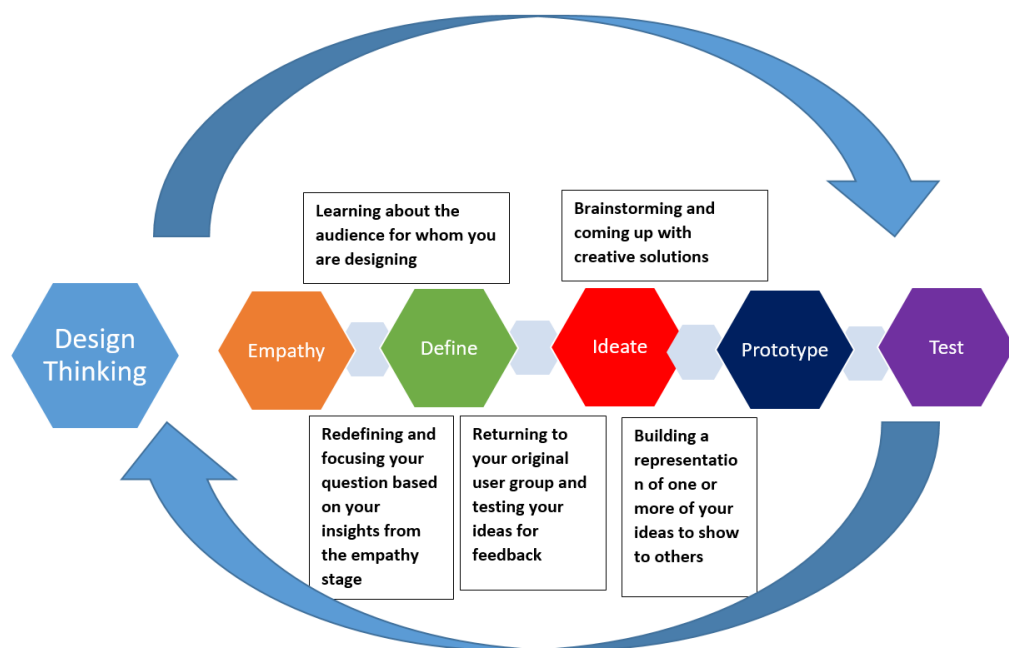

Figure 10. The design thinking process: design thinking requires the learner to work within a specific scaffold process to solve a design challenge. From "Design Thinking.png," by

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Popularized by the Stanford University d. school ("A Place for Explorers &
Experimenters at Stanford University," n.d.) and IDEO ("IDEO is a Global Design and
Innovation Company," n.d.), *design thinking* is a human-centered approach to the
design of products, services and environments. Consequently, it is concerned mainly
with human problematic situations and designing ways to improve them. It is also
promoted as an interdisciplinary approach that is able to bring together people from
different backgrounds and perspectives to collaboratively resolve complex problems.
Ostensibly based on how designers actually think and resolve problems in practice,
design thinking is promoted to business as a framework to develop innovative
solutions and products. The process commonly begins with empathizing with those
you are designing for, as a way of understanding and defining the design challenge.
Potential solutions are then generated through a process of ideation, and from this,
prototypes are developed which are iteratively tested and refined. Although design
thinking is often presented diagrammatically as a linear process (*see Figure 10*), it is
primarily conceived as an iterative process involving rapid cycles of ideation,
prototyping and testing.

However, there are a number of issues with, and criticisms of, design thinking—as
formulated by IDEO and the Stanford d. school—that call for a rethinking. Nussbaum
(2011) suggests that in its appropriation by business as an innovation tool, design
thinking ignores the messy, emotional and experimental nature of designing. Kimbell
(2011) notes that there are also inherent dualisms in *design thinking*—between
thinking and making, as well as between designers (as designing agents) and their
design situations. Based on Karen Barad's notions of *agential intra-actions* and
material-discursive practices, Kimbell (2012) suggests that *designing*, rather than
being a *thinking*, is an integrated, situated and embodied *thinking-in-practice*. As
such, it is better characterized as *design-as-practice*, whereby *practice* is understood
as the "nexus of minds, bodies, things, and their institutional arrangements within
which designs and their users are constituted" (Kimbell, 2012, p. 131). Rather than
Barad's agential realism, Dalsgaard (2014) draws on Deweyan pragmatism, Cross's
(2006) *designerly ways of knowing* and Schön's *reflective practice*, with its metaphor
of designing as a conversation with the situation (Schön, 1992), to provide the
conceptual framing for *design practice*. In design practice, in contrast to design

thinking, *thinking* and *doing* are conceived as integrated modes of transactional experience within design situations.

Of particular relevance to this inquiry, Cross (2006) suggests that *designerly ways of knowing* represents a separate inquiry paradigm, distinct from traditional academic arts and science inquiry. Rather than necessarily having definitive solutions, ill-defined and *wicked* design problems (Buchanan, 1992) often have multiple possible solutions that need to be experimentally played with through prototyping and testing. As such, Cross (2006) characterizes design inquiry as *solution-led,* rather than *problem-led*. Tentative (speculative) solutions are proposed as a way of exploring and understanding the problematic situation. This resonates with Schön's (1992) criticism of what he calls the *technical rationalism* of traditional academic inquiry, that privileges rigor over worldly relevance. However, rather than thinking of design inquiry as something separate to academic inquiry, I suggest that *all* inquiry—arts, science and design—can be framed as Deweyan inquiry. As an integrated process of reflective thought and action, grounded in worldly human experience, Dewey's notion of inquiry is able to offer both relevance and rigor. In addition, rather than thinking of design inquiry as being *either* problem-led *or* solution-led, *all* inquiry might be more accurately conceived as being both *problem-and-solution-led*—in which our understanding of the problem, and the solution, co-emerge/evolve through inquiry. From this perspective, inquiries start with tentative speculative solutions that emerge, or suggest themselves, abductively from the felt problematic quality of the situation.

Agile software development is a flexible and iterative approach to software development in which software is developed in incremental cycles known as *sprints*. Throughout the development process, software products are continuously user-tested and modified in response to feedback. This allows projects to respond quickly to unpredictability, be redefined, and change direction during their development lifecycle. Agile development originally arose as a response to what is termed the *waterfall* approach—in which software products are planned in meticulous detail and comprehensively documented before they are made. Consequently, they cannot very easily respond to change. In a similar way to design thinking, the agile approach is both human-centered and action-orientated. More specifically, according to the agile development manifesto (Beck et al., 2001), agile development values: "Individuals and interactions over processes and tools…Working software over comprehensive

documentation…Customer collaboration over contract negotiation" and "Responding to change over following a plan."

As an action-orientated learning cycle, in which proposed functionality is tested in action and modified in response to what is learned, agile software development has similarities with expansive learning, the SSM learning cycle and design practice. Where it differs, however, is that agile development often involves shorter, more frequent iterations designed for rapid development and release of commercial software products. In relation to this research, and education research in general, agile development offers an approach in which tentative concepts and propositions can be partially tested out in practice to see what works, without necessarily having to design and develop complete and robust models. In relation to this inquiry—starting with the implementation of my original agile proposal within a graduate diploma course—I have developed and tried out a number of approaches in different contexts, in an agile way. In addition to the graduate diploma course, these have included a Bachelor of Media Design programme, part-time evening short courses, in-situ workplace training sessions and one-off workshops. Rather than planning everything in detail in advance, they were approached experimentally and adjusted as we went, in response to the situation. As such, the agile development manifesto (Beck et al., 2001) can be reworked as an agile *learning* manifesto that values: *students and interactions* over pedagogies and tools, *learning experiences* over comprehensive documentation, *teacher-student-workplace collaboration* over curriculum and *responding to the situation* over following lesson plans.

Similar to the agile development approach, and often used together, the *lean startup methodology* (Reis, 2011; "The Lean Startup Methodology," n.d.) is also an action-orientated learning cycle used for developing business startups and new products. However, it can also be applied to the development of any new process, activity, practice or service. Rather than trying to determine whether a product *can* be built, the lean startup methodology firstly seeks to determine whether a product *should* be built, and whether a sustainable business can be built around it. As with agile development, the lean startup methodology is an incremental cycle of continuous innovation involving the iterative making and testing of a *minimum viable product* (MVP) with potential real-world customers. At its core is the *build-measure-learn feedback loop* that starts with the identification of the problem to be solved and leads to the development of an MVP. Through this process, changes and improvements can be

made along the way, or the project might be abandoned altogether—with a potentially new product emerging.

However, as with design thinking, there are potential issues with the lean start up approach, particularly in relation to its reliance on real-world customer feedback (Felin, Gambardella, Stern & Zenger, 2019; Mollick, 2019). Felin et al. (2019) argue that by emphasizing customer feedback as the primary source of validation for nascent products and services, the lean startup methodology results in incremental, rather than radical, innovation. They argue that customer imagination and vision is limited by what presently exists and what is presented to them for feedback. As such, it doesn't necessarily allow for looking beyond existing products and realities towards a speculative future. In a similar way to design thinking, which begins with empathizing with potential users—and the pain points that they experience in their present lives— the lean startup methodology devalues the initial role of tentative hypothesis formation in shaping the vision and direction of innovative products and services. Felin et al. (2019) give the examples of Apple, who notoriously relied on the vision of key employees, and Henry Ford, who famously quipped that "if I'd asked customers what they wanted, they would have told me, 'a faster horse'" (p. 3). They suggest that this gap between customer feedback and future vision requires careful formulation by the startup founders of the problem they are seeking to solve, and a theory of how to approach it, before experimentation and testing with potential customers. Approached in this way, this startup process more closely resembles Deweyan inquiry and Cross's (2006) *designerly ways of knowing*. It begins with the problematic situation—felt or intuited by the startup founders, rather than the customers—and the formulation of a tentative solution with which to explore the situation. In this way the problematic situation is able to be considered from a wider set of perspectives than just the customer's limited perspective. The implication for this inquiry is that rather than focusing on just the student's perspective of their learning experience, a wider set of perspectives needs to be considered,

The Unfolding Inquiry

As a Deweyan educational inquiry, this research does not follow any particular methodology. Rather, it follows Biesta & Burbules (2003) suggestion for "the use of multiple tools of inquiry to gain different perspectives on the problem at hand" (p.

108). As such, I have taken a custom, hybrid approach that loosely combines elements and methods from multiple approaches consistent with the pragmatist-enactivist onto-epistemology established in *Part One*. As outlined and discussed above, these include: reflective practice/practical reflexivity, expansive learning, formative interventions, change laboratories, soft systems methodology, design thinking/practice, agile software development and the lean startup methodology. Rather than adhering to a research design, as such, the path and processes of the inquiry unfold, or co-emerge/evolve, *through* the inquiry—consistent with both Deweyan inquiry and Engeström's expansive learning cycle.

The inquiry, then, as represented below in *Figure 11*, begins with the problematic situation that I personally experienced as contradictions and tensions between my agile teaching approach and the constraints of institutional and qualification structures. From this, a tentative solution for a *nomadic* agile approach—operating across the boundaries of traditional learning and work activities—emerged as a speculative proposition with which to further explore the problematic situation. The problematic situation and tentative proposition are discussed in *Chapter 5*. Loosely following the soft systems methodology *finding out* phase, I collected the perspectives of the various participants in the wider learning activities, through a series of semi-structured discussions. These were guided, in part, by the tentative proposition and involved former students, teaching colleagues and domain employers. These are summarized in *Chapter 6.* The collected perspectives are subsequently discussed more critically in relation to my own practical understanding of the problematic situation, the tentative nomadic agile learning proposition and the pragmatist-enactivist onto-epistemological framing, in *Chapter 7*. This corresponds generally to the *reasoning* phase of Deweyan inquiry (see *Figure 3*, *Chapter 2*) and the *examining and testing* stage of expansive learning cycle (see *Figure 8*, this chapter). The discussion in *Chapter 7* is organized around four main themes: the *purpose* of the learning, *what* needs to be learned, *how* it can be learned, and possible contexts. These are then integrated back into a whole more fleshed-out and refined iteration of the proposition for a nomadic agile learning approach in *Chapter 8*. Beyond the scope of this inquiry, this could lead to applying the nomadic agile approach in practice, as a potential pilot programme, for further research. The inquiry, as it ended up unfolding, is summarized below in *Figure 11*.
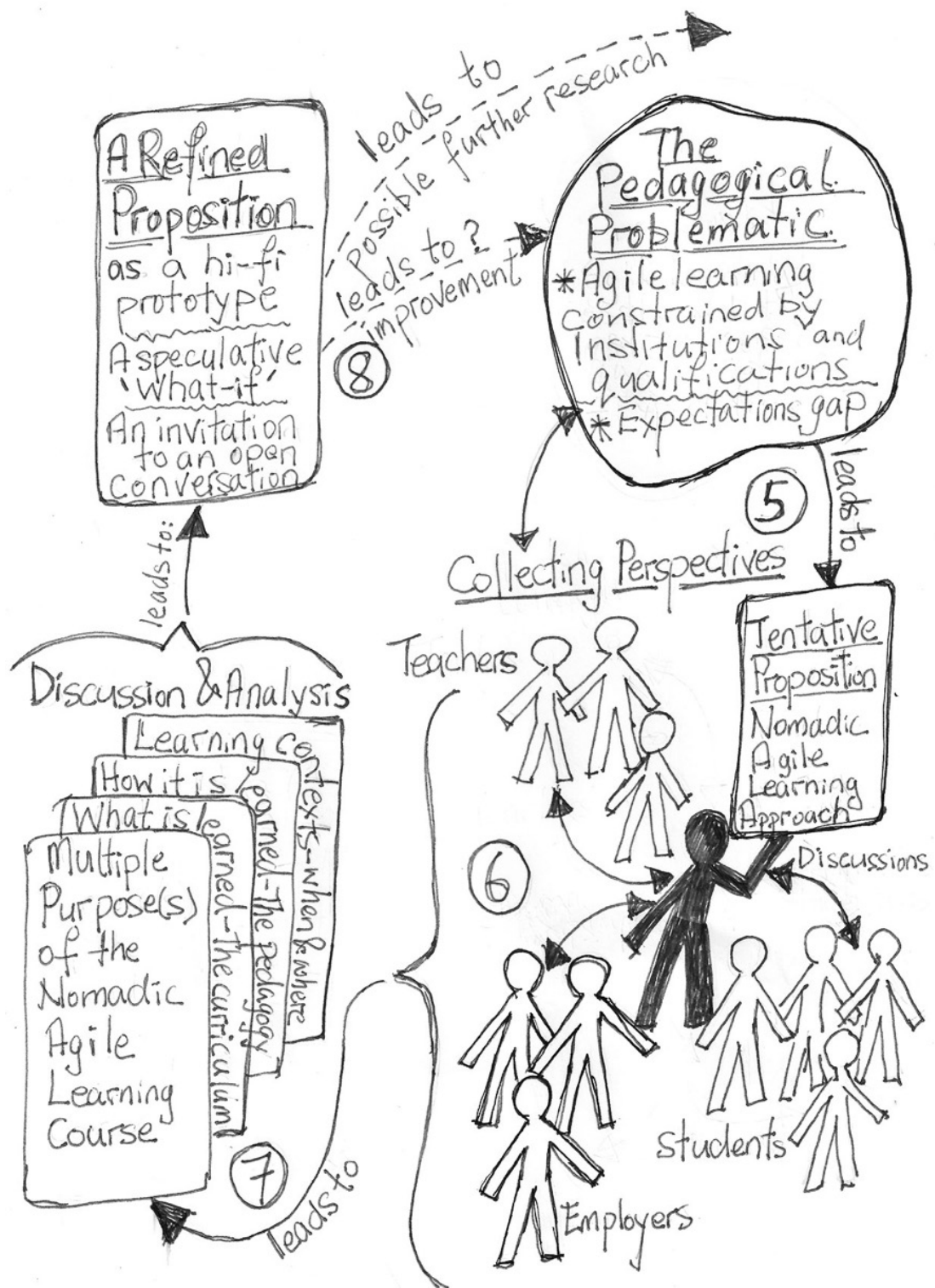
Figure 11. The pedagogical inquiry, as it unfolded. The numbers 5–8 represent the respective chapters of this thesis.

Chapter 5

The Problematic Situation and Tentative Proposition

As the starting point of this inquiry, I will begin by outlining the tensions and contradictions that I personally experienced when applying an agile learning approach within a graduate diploma of creative technologies. However, rather than regarding my reflection on my experience as solely my own *subjective* interpretation, I will follow Rosiek & Aitkinson (2005) in their view that as teachers' perspectives are mediated by the sociocultural-material environments, practices and communities that they are part of, they represent a significant source of *intersubjective* knowledge. In my own teaching life, I not only participate directly in teaching and learning situations involving students, but also participate in wider communities of teachers, practitioners, employers and institution managers.

The problematic situation then leads to an outline of a tentative proposition for a nomadic agile learning approach. Just to be clear, this chapter represents only my initial tentative understanding of the problematic situation, and a tentative solution. Following an agile design practice approach, rather than trying to completely understand ill-defined, *wicked* problems prior to developing a solution, the problem space is explored and revealed through the development of possible solutions (Cross, 2006). As such, this inquiry is best thought of as being *problem-and-solution-led*, in which the understanding of the problem and possible solution(s) co-emerge. This contrasts with traditional *problem-led* academic research approaches (Cross, 2006) involving what Schön (1992) might characterize as *technical rationalism*. Rather, this inquiry follows Schön's call for practice-based education research involving teachers "reflecting and building on their own know-how" and using their confusions "as springboards to new ways of seeing" (Schön, 1992, p. 121).

In applying an agile approach in my teaching practice within a graduate diploma of creative technologies (GDCT) between 2014 and 2016, a number of issues emerged. Some of these related to organizational teething problems and were able to be resolved through various adjustments, attunements and adaptations within the day-to-day unfolding of the course. However, there still remained deeper structural contradictions and tensions—between the agile approach and institution and qualification structures—that were not so easily resolved. Dominant learning models involving prescribed curricula, defined learning outcomes and assessment are deeply embedded within the culture, practices and policies of educational institutions and qualification frameworks. It is in this way that institutions and qualifications necessarily constrain agile learning approaches such as flexible individualized curricula, emergent learning outcomes and flexible pedagogical approaches.

During the initial development of the agile approach (Stevens, 2013), I had experimented with certain aspects of it within a previous digital media course. However, moving from a conceptual proposal—informed by small scale experiments—to applying it in practice across a whole new course represented a quantum leap that I wasn't completely prepared for. For example, I had developed and trialed bespoke learning management systems, introduced *flipped-classroom* approaches (Khan, 2012) using interactive coding tutorial sites (https://www.codecademy.com) and experimented with self-organizing learning environments (SOLEs) (Mitra, 2012), as a way of organizing collaborative group projects. Yet despite this, the first iteration of the GDCT course was initially quite chaotic and a massive learning curve—for me, as well as the students. Perhaps the biggest issue was the wider than expected variance in the students' backgrounds, learning goals and pedagogical expectations. Although I had anticipated and felt confident that I could cope with student differences, I underestimated the extent to which their previous educational experiences, and more general sociocultural norms, influenced their pedagogical expectations and their underlying epistemological beliefs. It turned out that these were quite deeply ingrained and not easily shifted.

For students enculturated within previous educational and work situations, the agile approach was new and unfamiliar and required a shift in their understanding, as well as their buy-in. In particular, they needed to have confidence and trust in the agile approach to achieve their goals. Generally, I found that students from art and design backgrounds adapted relatively easily, while those from backgrounds such as

computer science and commerce found it more difficult—sometimes to the point of resistance. This represented a major oversight on my part. I had not adequately considered that the teaching and learning approach itself needed to be learned, understood and bought into by the students. Furthermore, they could only really learn to learn in an agile way through doing it, rather than solely through explication. Interestingly, even those who initially resisted the agile approach did eventually come around to learning in a more agile way through the unfolding of the course. In subsequent intakes, I made a point of meeting individually with students prior to the course to explain the approach and find out more about their individual backgrounds and goals. I also ran *learning methods* workshops as a way of breaking down their existing pedagogical and epistemological beliefs. These were often quite emotional and moving—particularly when students talked about their previous learning experiences at school.

The wide variance in the students' prior understandings, capabilities and learning goals was also much greater than I had expected. Although I encouraged students to work through online interactive tutorials prior to the course starting—as a way of closing the gap—there was still a wide variance in what and how they were learning, right from the beginning. This led not only to a widening of possible learning outcomes across the course, but also multiple, overlapping individual curricula. As a consequence, I had to be much more open to emergent learning and production outcomes than I had expected—as well as to a certain amount of chaos. This required a shift in my own thinking and a letting go of my own expectations of what I thought they *should* learn. In other words, I had to let go and trust in what emerged.

Yet, despite being able to exert some level of influence and control over the unfolding of the course from within, there remained structural contradictions and interpersonal tensions between the agile course and its institutional context. In particular, I had not anticipated the extent to which my colleagues and institutional managers held different worldviews, epistemological beliefs, and teaching philosophies. This turned out to be a significant issue, resulting in interpersonal and political tensions that were also not easily resolved. This was a revelation for me personally and represents a major challenge for trying to establish alternative approaches that deviate from the mainstream within existing organizations. Particular worldviews, epistemological beliefs and pedagogical approaches are deeply embedded in institutional practices, norms, rules and policies—as well as in habitual teaching and assessment practices,

and educational vocabularies. Consequently, traditional educational contexts, and those enculturated within them, place very real constraints on what is possible to learn and know. This is perhaps what Schön (1992) refers to as the "bureaucratically based epistemology of schools" in which:

> According to this view, teaching tends to be seen as a process of delivering information and testing students for its reception and retention. Students tend to be disconnected from the commonplace understandings and competences built into their ordinary commerce with the world. Teachers, likewise, tend to be disconnected from what they already know. (Schön, 1992, p. 120)

In particular, I have personally found that there is general disconnect between teachers and the technocratic layer of institutional management—with its top-down implementation of New Zealand Qualification Authority (NZQA) and Tertiary Education Commission (TEC) policies and regulations. Recent surveys of the New Zealand state tertiary education sector commissioned by the Tertiary Education Union (Oosterman, Sedgwick, & Grey, 2016; Sedgwick & Proctor-Thompson, 2019) also found tensions and contradictions between the managerial level and teaching faculty. In their view, "our current market based tertiary education system continues to attack, and erode the expression of professional values by staff in the sector" (Sedgwick & Proctor-Thompson, 2019, p. 4).

> Enduring values and collegial relationships within departments are still acting as the heart that is pumping blood around the sector. But the changes that have been ongoing for over 20 years are beginning to seriously damage this source of life-blood…The fundamental orientation of the sector needs to change. We need to turn away from the competitive, marketized model of business, back to the recognition of the value of tertiary education to society and its ability to transform the lives of all the people of Aotearoa. This change needs to happen now. (Sedgwick & Proctor-Thompson, 2019, p. 8)

This marketized commodification of education is predicated on the neoliberal worldview in which education is seen primarily as a private good, courses of learning as commodities, and learning as something that can be objectively quantified and measured. However, notwithstanding Sedgwick & Proctor-Thompson's (2019) call to turn away from the neoliberal education model that pervades both private and public tertiary institutions, my approach here is rather to explore the possibilities and opportunities for domain-specific learning beyond of the constraints of existing market-based institutions.

Notions of knowledge, teaching and learning are also embedded within government qualification frameworks and education policy. The *New Zealand Qualifications Framework* (NZQF) sets out the rules and regulations for all senior secondary school and tertiary education qualifications in New Zealand. According to the New Zealand Qualifications Authority [NZQA] (2016), the NZQF is a "framework based on outcomes, described in terms of knowledge, skills and attributes, and their application…The NZQF provides information about what knowledge and experience holders of qualifications can be expected to have…" (p. 2). In other words, the NZQF seeks to quantify and measure the *quality* of educational outcomes. As such, qualifications are required to stipulate in advance a set of prescribed learning outcomes (knowledge, skills and attributes, and their application) against which students are assessed. Qualifications are also assigned learning *levels* ranging from 1 to 10, representing *lower* to *higher* learning, and given *credit* values based on their expected duration.

Notwithstanding the epistemological issues with the NZQF, the notion that learning is a quantifiable and measurable achievement, or acquisition, of predefined *described* outcomes, within a fixed timeframe, conflicts with the agile learning approach—involving an emergent collection of individualized curricula, with learning outcomes that are not known in advance. Qualifications, situated within a hierarchy of learning levels, with their own defined graduate outcomes and entry requirements, effectively create barriers that exclude those from outside the qualification system—as well as those with divergent and emergent learning goals. For example, they exclude those without the necessary prerequisite qualifications, as well as those who might be changing careers or upskilling in specialized areas. The agile approach directly challenges the idea of learning as a quantifiable commodity, assessment as measurement for the purpose of grading students, discrete *levels* of learning, and prescribed entry requirements. In my teaching experience, the learning goals, the learning path and the actual learning outcomes are not only different for each individual learner, they can never be fully known in advance. Rather, they emerge from their various individual learning experiences and ends-in-view. In particular, I have found that component descriptors—with their prescribed learning outcomes, learning levels and credit values—constrain emergent learning possibilities. However, as with educational institutions, rather than seeking to necessarily change the qualifications framework, my approach in this inquiry is to explore the possibilities and opportunities for domain-specific learning beyond the constraints of the NZQF.

A central part of my original agile teaching approach involved introducing and connecting learners to the domain of practice (see *Figure 20*, *Appendix A),* in which they learn in a more immersive and direct way as participating practitioners. Initially, this involved introducing novice learners to foundational concepts and skills in a more traditional pedagogical way—for example, through teacher-led worked examples. It also involved connecting students to open online domain resources, such as blogs, videos, interactive coding tutorials and open-source code repositories. Through this they could learn in a more self-directed *just-in-time* way—integrated with project-based learning. As students become more skilled and competent practitioners, they are able expand their participation in the domain of practice by undertaking more complex real-world projects in collaboration with experienced professional practitioners. Eventually this might lead to participating in actual workplace practices and projects in the form of work placements, internships and graduate programmes. This approach of being exposed to, and participating in, domain workplace practices is generally known as *work integrated learning* (WIL).

However, WIL activities can often be problematic. Pilgrim & Koppi (2012) identify what they call an *expectations gap* between teaching faculty and employers, arising from their different objectives, values and worldviews. They found that while employers expect learning institutions to provide them with *work-ready* graduates, the expectation of the institutions and faculty is rather to develop rounded students with life-long learning skills. The students themselves tended to share the view of employers that the curriculum should be focused on gaining skills that lead to employment. Poppins & Singh (2005) found that, in relation to work placements and internships, students often have difficulty adjusting to the demands of working while completing course assessments. There is also an administrative burden on teachers coordinating student placements, industry projects and mentors.

In my own teaching experience, within both graduate diploma and undergraduate programmes, I have had a number of students involved in a range of WIL activities. These have included practitioner-led workshops and talks, live briefs, hackathons, communities of practice (involving students and practitioners), industry panels, work placements, internships and part-time paid work. However, rather than these involving formal agreements or memorandums of understanding, they tended to happen in an ad hoc way and were not without problems. I also found that there was a general gap between employers' expectations and my own expectations of how student learning

might take place within these situations. Employers usually have time-constrained commercial objectives that do not necessarily allow for slower learning activities. They also do not always have the resources to mentor and supervise student learning. Although learning is ongoing and continuous within workplaces, the focus for employers tends to be on work-flow efficiency and the professional quality of outcomes.

Furthermore, the dominant societal, neoliberal narrative tends to privilege the industry-employer perspective that the purpose of education is to provide them with a sufficient supply of suitably skilled, *work-ready* employees. In an interesting recent turn—and one that highlights this expectations gap—in October 2017, 100 leading NZ companies signed an open letter to the New Zealand public ("An Open Letter to the New Zealand Public," 2017) in which they question the value of tertiary qualifications and whether employers and employees might not be better off if employees simply learn their skills on the job. Their solution, to the problem of educational institutions not providing them with what they think they need, is to bypass education altogether, and illustrates a view in which teaching and learning are not valued.

Summary / Conclusion

To summarize the problematic situation, then, as I initially understood it, the main aspects were: the tensions and contradictions between the agile approach and institutional structures and qualification frameworks; and the tensions and contradictions between learning activities and work activities. However, in developing possible solutions, the original problematic conditions that the agile approach was a response to in the first place, still need to be taken into consideration. These were: the rapidly changing and emergent nature of creative technology domains, the wide variance in individual learners, and the abundance of open online resources.

Of course, I could simply modify the agile approach to bring it into line with existing institutional and qualification structures. However, by doing this, its agility would be reduced, and I would just end up back where I started. Besides, this does not address the expectations gap between the learning and work activities, nor the epistemological issues discussed in *Part One*. Alternatively, I could attempt to change the institutional and qualification structures themselves, to accommodate more agile forms of learning. However, this is a much bigger and more complex task that would

run up against deeply embedded epistemological beliefs, pedagogical practices and worldviews that might not be so easily shifted. Another alternative is to explore the possibilities and opportunities for agile forms of learning beyond the constraints of institutions and qualifications, but within the wider domain of practice. Not only does this potentially resolve the tensions and contradictions with institutions and qualifications, it also offers a way of potentially dissolving the boundaries between learning and work activities—within the *transaction space* of the domain of practice. Decoupled from institutions and qualifications, both learning courses and individual learners potentially become nomads.

This now leads to the initial tentative proposition for a nomadic agile learning approach. Just to be clear, the proposition, as outlined below, is in an initial, nascent form—a speculative suggestion, to be played with and entertained. It is subsequently used to further explore the problem situation and is developed further in a more refined and fleshed-out iteration in *Chapter 8*.

A Tentative Proposition for a Nomadic Agile Learning Approach
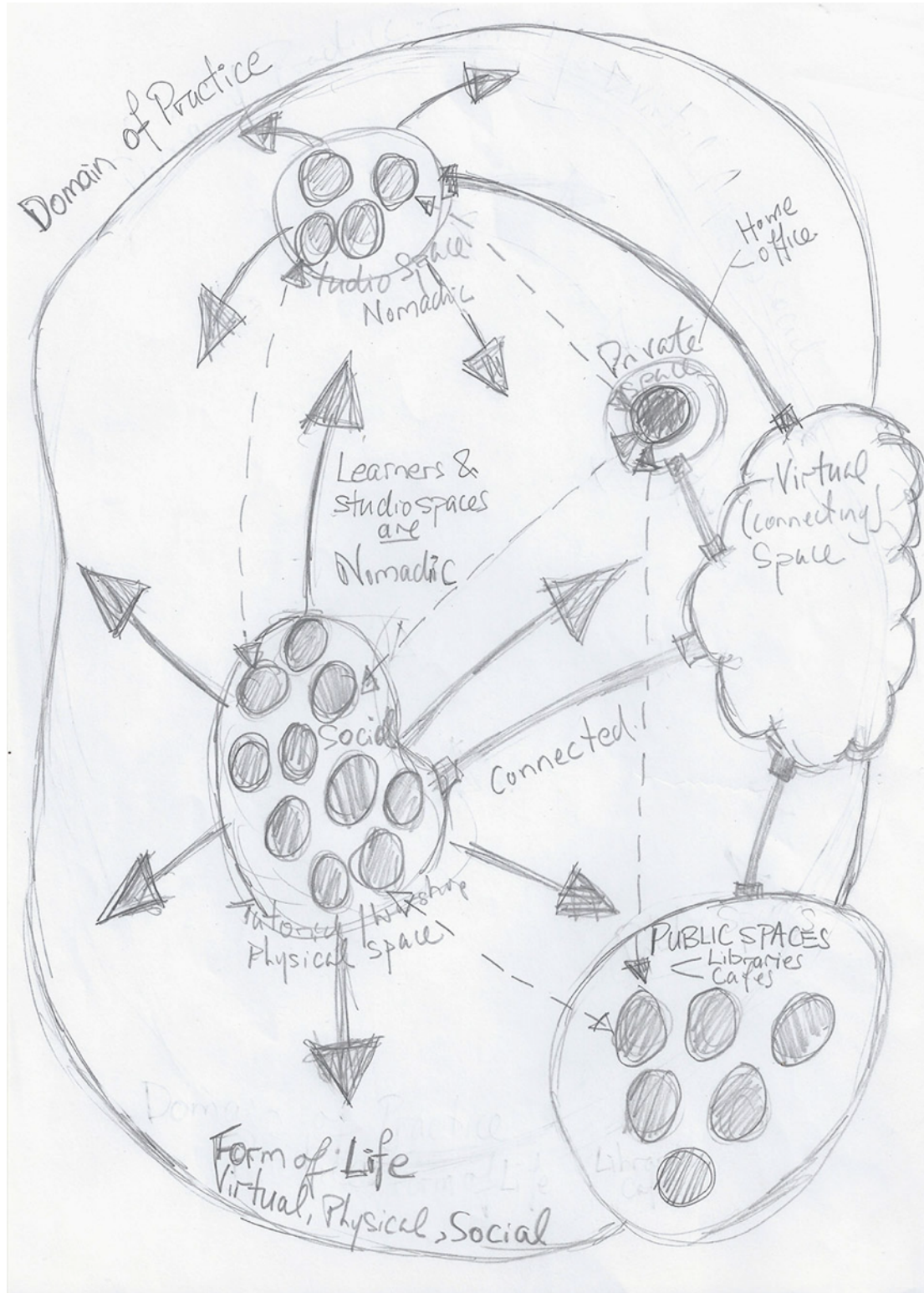

Figure 12. An initial rough sketch of nomadic agile learning within the domain of practice.

In a nomadic agile approach, learning courses might still exist as cohorts of learners, but not necessarily take the traditional form of a batch of students that progress through a prescribed curriculum over a set timeframe towards prescribed leaning outcomes, in a fixed location. Rather, the nomadic agile course is envisaged as a flexible, dynamic grouping that not only has multiple individual curricula and emergent learning outcomes—it can also potentially change its composition (of learners), move around different physical and virtual locations, and take place over a variable timeframe. Although the nomadic agile course operates beyond the constraints of institutional and qualification structures, this does not necessarily preclude the possibility of it running within, or across, existing institutions as a pilot programme or change laboratory. Similarly, it could still potentially lead to some new form of NZQA sanctioned qualification—for example, in the form of a cluster of micro-credentials (NZQA, 2018).

Multiple Intertwined Purposes

The purpose of the nomadic agile course is broader than just producing work-ready employees for industry employers. It also takes into consideration the purposes of the students, the local community and society in general. Taken together, and following the Finnish universities of applied sciences, the purpose of the nomadic agile learning course might be generally to prepare students for working life as domain practitioners (Taatila & Raij, 2012). In relation to the focus of this inquiry, this would be specifically to prepare students for working life as practitioners in the web and interactive domain. However, nomadic agile learning could also potentially be applied to other creative technology domains, and possibly other domains. Furthermore, *practitioners* are not just limited to professional practitioners and employees, but rather, can include anyone practicing within a particular domain of practice. For example, in the web domain of practice, practitioners refers to anyone involved in the creation of web products and artefacts. These might include social and commercial entrepreneurs, amateurs and hobbyists, as well as teachers and students. In this way, the purpose for learning is distributed across the individual learners and their sociocultural contexts. It takes into consideration the learner, both as an individual subjectivity making their way in the world, and as part of multiple sociocultural communities that they participate in, contribute to and sustain. Although the purpose does not solely privilege industry employers, it does incorporate their needs and requirements—but as an integral and essential part of the whole domain of practice—along with the needs and requirements of individual students and society.

Emergent Learning Outcomes

Rather than having a fixed set of learning outcomes that are determined in advance by the industry (i.e., knowledge, skills and attributes, and their application) individual student learning emerges from the various learning-work-community situations that they participate in. Learners do not necessarily know where they might end up within the domain, or even whether they will become domain practitioners at all. Part of the purpose of the nomadic agile approach is to experience and explore the domain in order to find a direction. However, it is possible that they may end up discovering that the domain is not for them at all. In traditional approaches, not being engaged in, or not completing, a course is generally thought of as a failure. However, in the nomadic agile approach this might be considered rather as a successful discovery—within a longer timescale learning journey involving making one's way in the world. Consequently, the nomadic agile course needs to allow for the ability to easily drop out without the stigma and feeling of failure. This approach obviously stands in contrast to NZQA key evaluation questions (KEQs) related to student completion and retention rates, and graduate employment outcomes (NZQA, n.d.-a).

A Learning Continuum

Becoming a practitioner connotes a continuous process of transformation and development which is never complete. Rather than the process of learning abruptly finishing with becoming a professional practitioner, learners are better understood as practitioners from the start—albeit novice and inexperienced—that undergo a continuous process of *becoming-more-experienced.* As such, learning continues within professional work situations *as* practitioners. In other words, not only can learners be seen as continuously developing practitioners, practitioners are also continuously learning. In this way, learners and practitioners are rather learner-practitioners—only with different levels of experience and skill.

Nomadic Locations

Nomadic agile learning does not need to happen in a fixed location within the physical space of an educational institution. Rather, teaching and learning activities can potentially take place anywhere and at any time—with both the learning course and the students being nomadic. Learning activities might include tutorials and workshops, involving larger groups of students in more traditional teaching spaces, but could also include group project work involving face-to-face and remote

collaboration. Learning activities might also include work activities, such as live briefs, work placements and internships. As such, the physical locations of both individual learners and various group configurations might include shared studio spaces, workplaces, public spaces and private spaces. Public spaces might include cafés, libraries, maker spaces, urban lounges and public transport—while private spaces might include offices and homes. Physical spaces might also include spaces within existing education institutions. However, rather than being restricted to one institution, they might include multiple institutional spaces. Potentially, all a learner requires to interact with their extended learning environment is a laptop and/or mobile device, and an Internet connection. In a similar way to how *Sharedspace* (Sharedspace, n.d.) works, regular meetups, tutorials and workshops could potentially take place across multiple combinations of workplaces, community spaces and educational institutes with spare underutilized spaces.

Community Involvement

The nomadic agile approach can also potentially provide opportunities to run courses in different areas at different times to serve local communities, rather than students having to travel long distances to central city locations at inconvenient times. As an example, nomadic agile courses could serve the local South Auckland/Manukau communities, perhaps in conjunction with the Southern Initiative, which "champions, stimulates and enables social and community innovation in South Auckland" (Auckland Council Te Kaunihera o Tāmaki Makaurau, n.d.-b), and Panuku Manukau (Panuku Development Auckland, n.d.). This could potentially utilize a combination of existing spaces, such as: the Manukau Library (Auckland Libraries, n.d.); Manukau Institute of Technology (Manukau Institute of Technology, n.d.); AUT South Campus (Auckland University of Technology [AUT], n.d.); The University of Auckland South Auckland Campus (University of Auckland, n.d.); as well as local secondary schools and Auckland Council community venues (Auckland Council Te Kaunihera o Tāmaki Makaurau, n.d.-a).

Emergent Timeframes and Configurations

The nomadic agile course would not necessarily need to be a set length for all students or be continuous. Rather, it could be open ended. Students could participate full-time or part-time, as well as drop in and out, depending on their life situations. As each student has their own learning goals, prior understandings, dispositions,

aptitudes, and life situations, the course structure and curriculum, in keeping with the original agile approach, need to be flexible and individualized. Rather than thinking of the course as an overarching structure in which individualized emergent curricula are situated and constituted, the course itself emerges from the dynamic interplay between the multiple intersecting and interacting individual learning paths. In other words, the course is co-constituted by the learning and practice activities of the participants. In this way, rather than the course determining what is learned, what is learned determines the course—with what is learned being determined by the students' transactions within the domain of practice. However, for practical reasons, timeframes for individual students cannot necessarily be completely open-ended either, and I would anticipate that the overall goal of becoming a web practitioner could be achieved in one to two years. In my view, three-year undergraduate programmes are unnecessarily long, costly and tend to place too much emphasis on academic rigor over relevance. Graduate diplomas, although only one year long, are also problematic, as they exclude potential students without previous qualifications or work experience. For a course to be able to cater for the multiple purposes of learners, employers and the wider community, it needs to be both inclusive and relevant. Consequently, it needs be open to anyone with the potential, desire and motivation to become a practitioner.

A Transaction Space

Seen through the lens of third generation activity theory, the nomadic agile course can be thought of as a *transaction space* (McMillan et al., 2016) that operates across the boundaries of traditional learning activities, work activities and community activities. In addition to potentially providing physical spaces, workplaces can also participate in WIL activities such as live briefs, work placements, internships and collaborative projects. More experienced practitioners (including teachers) could supervise, mentor and work collaboratively with students on team projects. In this way, rather than industry employers demanding that educational institutions supply them with work-ready graduates or suggesting that they might be better off training their employees completely on the job, they would actively participate in collaboration with teachers, practitioners and community organizations within an integrated transaction space. As such, employers are not only *providers* of learning opportunities for would-be practitioners and employees, they are also the beneficiaries of a steady supply of work-ready graduates. Through their participation in shared learning-work activities, employers, teachers and students might also gain a deeper understanding of learning

and working from different perspectives, contributing to a narrowing of the *expectations gap*.

No Qualifications or Assessment

In the agile approach, as learning outcomes are flexible and emergent, assessment for the purpose of measuring and grading students is both problematic and unnecessary. Grading only makes sense if there are predefined learning outcomes against which student learning is somehow able to be measured. Even within the NZQF, the practice of quantifying the qualitative is not only highly problematic, but in my experience creates an unnecessarily competitive environment in which students put too much emphasis on their grades, rather than their work. In the agile approach, the teacher and the student might initially negotiate individual learning outcomes as ends-in-view, in order to give direction to the student's learning. However, rather than their learning outcomes being fixed and measurable, they emerge and change direction as the students are exposed to new situations, possibilities and opportunities. Consequently, for the proposed nomadic agile approach, grading is neither necessary, desirable or even possible. However, formative assessment—the giving of more immediate in situ feedback and guidance—that the student is able to act upon, could be embedded seamlessly into the course (Wiliam, 2011). Rather than being an objective quantified assessment of student learning, formative assessment is a qualitative subjective interpretation by the teacher, based on their practical educational judgement and wisdom (Rosiek & Atkinson, 2005; Biesta, 2013). However, rather than feedback going only one-way—from the teacher or practitioner to the student—it might take the form of what Schön (1992) calls a "reflective conversation with the situation" (p. 126). As such, feedback becomes multi-directional, with teachers, students, practitioners and employers all giving feedback to each other. Ultimately, however, the students' skills and understandings are made visible in their work. They are able to demonstrate what they know to other domain practitioners and potential employers, through showing and talking knowingly about their work. In my experience, employers are generally not interested in students' grades. Rather, they evaluate the students themselves through looking at their portfolios and talking to them.

Beyond Constructivism

Finally, the nomadic agile approach moves beyond the constructivist epistemology that underpinned the original agile approach to a pragmatist-enactivist onto-

epistemology, as discussed in *Part One*. From the pragmatist-enactivist perspective, learning emerges from the learners' dynamical transactions with their sociocultural-material learning environments. Within these learning situations, learners transact not only with the tools, materials, and other people in their immediate physical environment, but also with tools, materials and people in spatially remote locations through connecting technologies. However, although we might think that we are transacting with the remote, we are in reality transacting with the connecting technologies. For example, transacting with an online interactive tutorial involves coordinated, body-mind sensorimotor interaction with the keyboard and computer screen. Even though they might be complex tools and part of complex networks—as body-mind organisms, our transactions are with the tools and their meanings in use.

Conclusion

To reiterate, my understanding of the problematic situation and the proposition for a nomadic agile learning approach that I have sketched out above are tentative only, and merely form the starting point for the rest of *Part 2*. I am not attempting to understand the problematic situation in a complete and comprehensive way first, and then deductively, or inductively, develop a solution. Rather, the situation becomes problematized (for me) through the tensions and contradictions felt in my lived teaching experience—applying an agile teaching approach. From the perspective of the expansive learning cycle, these represent the *questioning need state* that is problematized as a *double bind* (see *Figure 8, Chapter 4*). Specifically, these were the structural contradictions between agile learning and institutions and qualifications, and the tensions between learning activities and work activities. From a Deweyan inquiry perspective, the tensions and contradictions create a disturbance or disjunction in the flow of my teaching practice that leads to the intellectualization of the situation as problematic. From the problematic situation, a tentative solution emerges abductively as a working hypothesis, or speculative proposition, for a nomadic agile learning approach. The nomadic agile approach retains the emergent, flexible, individualized curricula of the agile approach, but moves out beyond both the physical and metaphorical walls of institutions and qualifications—into the *transaction space* of the wider domain of practice. Within the domain of practice, the walls between learning activities and work activities are dissolved to form a learning-practice-work continuum

in which both individual learners, and communities of learners (courses), navigate nomadically through a series of unfolding learning-practice situations.

However, as it stands so far, this proposition is based primarily on my own practical reflexivity. It now needs to be tested and triangulated against other perspectives. Consistent with design practice, agile development and lean startup approaches, the proposition can be thought of as a low fidelity prototype—as a tangible artefact that can be shared with others for feedback. In this way, the proposition is used to further explore the problematic situation. This now leads to the next phase of the inquiry— collecting other perspectives.

Chapter 6

Collecting Other Perspectives

Following on from my initial tentative understandings of the problematic situation and speculative proposition for a nomadic agile learning approach, I then set out to collect the perspectives of other participants in the learning and work activities. These were former students (current practitioners), former and current teaching colleagues and domain employers. The perspectives were collected through a series of semi-formal discussions that loosely followed a soft systems methodology approach, involving open-ended questions and using my tentative proposition to structure the conversation (see *Appendix C, d*). These discussions were held mainly in public cafés, over coffee, and usually lasted between 60 and 90 minutes. Ethics approval was applied for in advance from the AUT Ethics Committee, and subsequently approved with some modifications (see *Appendix B, a & b*). Participants were recruited mainly from people already known to me, via email (see *Appendix C, a*), with a participant information sheet attached (see *Appendix C, b*). Under of the conditions of the ethics approval, I could not hold any discussions with current students. All the participants completed and signed consent forms (see *Appendix C, c*) prior to the discussions. During the discussions, I made hand-written notes which were subsequently written up digitally in Microsoft Word afterwards. No audio or video recordings were made of the discussions. The object was not to undertake detailed discourse analysis as a primary data source. Rather, they were considered more as open conversations in which I could gain a sense of, or feeling for, the participants' various perspectives. From a design thinking/practice perspective, the discussions might be seen as a way of empathizing with the people you are designing for, in order to gain further insights into their experiences and pain-points. I should add that these discussions are by no means exhaustive and are not the sole source of my understanding of their perspectives. Rather, their purpose was to triangulate my initial tentative understanding of the problematic situation with other perspectives, and to gain some feedback and response to my nomadic agile learning proposition. They should also be

seen in the wider context of regular ongoing informal conversations with students, practitioners, teachers and employers that have also informed my understanding—as well as my own personal experiences as a student, practitioner, teacher and employer.

I have summarized below the key points that arose from the discussions. These are primarily organized around the main participant groups—students, teachers and employers—but within each grouping, they are broken down into themes relating to the areas I was trying to find out more about. At this stage, I do not offer any in-depth analysis, but I provide some initial, cursory thoughts at the end of each section. These then act as a springboard for more in-depth discussions in *Chapter 7*.

The Student Perspective

In relation to the student perspective, I held discussions with nine former students whom I had taught at various times between 2011 and 2016. Five of them had completed the level 7 Graduate Diploma of Creative Technologies (GDCT) between 2014 and 2016. The GDCT had been approached in an agile way, as per my original agile learning proposal (Stevens, 2013). The other four students had completed a previous Diploma of Digital Media (DDM) between 2011 and 2013, which was only partially approached in an agile way. All of them, at the time of the discussions, were working in some capacity within the web domain of practice—two of them running their own businesses. I was interested in three main areas. Firstly, their student learning experience (of the agile course), including their pain-points and how it could have been improved. Secondly, their experience transitioning from the course to work, including their ongoing learning *as* a practitioner. Thirdly, their response to the tentative proposition for a nomadic agile approach. The rough sketch (*Figure 12*, *Chapter 5*) was shown to them for feedback and discussion. As per the ethics approval, I have not used any names.

Their Experiences and Views of the Courses

For the students who undertook the older DDM course, the prescribed curriculum was generally felt to be an issue. As mainly higher-performing students, they felt restricted and held back. They would have preferred to work on more self-determined projects

that interested and extended them, rather than the required prescribed briefs. The course structure—with summative project assignments, goals and deadlines—was seen on the one hand as providing motivation, accountability and direction. Yet on the other hand, it did not allow enough time for them to pursue their own interests and direction.

Students who undertook the agile-approached GDCT course, on the other hand, felt that the more open, flexible approach did allow them to pursue their own goals and develop in their own direction. Yet, at the same time, they felt it resulted in a lack of direction and over scoping of projects. However, in taking the course, as opposed to learning solely by themselves, they felt that the experience had opened up new possibilities and opportunities, which they had not previously considered. They had also gained more confidence to learn new things and problem solve by themselves. The course also provided them with a framework and direction, as well as access to more experienced and knowledgeable practitioners.

For all students, on both courses, the wide variance in students' backgrounds, abilities, motivations, etc., was seen as an issue. For the higher-performing students, it was felt that the class group was held back by having to allow for the slower students—both in terms of the pace of the course, and the slower students taking up too much of the tutor's time. On the other hand, one student with no previous experience found it difficult and very stressful to keep up with in-class worked examples, and preferred working on their own at their own pace. However, the higher-performing students did feel that helping other struggling students actually helped them with their own learning and understanding.

Generally, it was felt that class sizes needed to be restricted to 12 to 14 students at a time, due to the technical nature of the course requiring a lot of tutor assistance. Alternatively, tutor assistants were suggested for larger class groups. They all felt that working on practical hands-on projects provided them with real-world relevance. The social aspect of being part of a community of learners was generally seen as a positive motivating factor. According to one student, this "lifted each other up," as well as providing a socially cohesive and supportive environment. One student from the agile GDCT course, on the other hand, had felt socially isolated because the other students had formed into "cliques" that she felt excluded from.

Group projects were seen as mainly advantageous but were also felt to be problematic. They were considered valuable learning experiences that allowed for the development of collaborative social and communication skills, as well as hard practical skills. Although group projects provided opportunities for challenging and mentoring each other, it was felt that in order to function well, they require good leadership, clear roles and direction. It was also generally felt that groups work best when team members have complementary skills. Some of the students commented that they would have liked more group work.

The one-year length of the courses was seen as an advantage—especially for adult learners—in contrast to three-year degree courses, which many had already completed previously. Two students who had dropped out of bachelor's degree programmes—but who had prior coding experience and a high aptitude—excelled in the one-year time-frame. One of the students felt that writing reports and grades were a waste of time and did not contribute to their learning.

Their Experiences of Work Integrated Learning (WIL)

Three of the students undertook internships and part-time work during the course and generally found this to be a valuable learning experience—especially in relation to experiencing workplace cultures, environments and practices. However, they also noted a difference between the course and workplace expectations. Not only were they able to apply things they had learned on the course to their work, they were also able to apply things learned in the workplace to their coursework projects. They also felt that being part of actual workplaces provided them with the opportunity to break into the industry and get a full-time job at the end of the course. All three of them considered their work/internship experiences as an integrated part of their agile learning course rather than something separate.

Two of the students were involved in working collaboratively on a live brief for a *real-world* client. Overall, they found this to be a valuable and worthwhile learning experience. Through this, they were able to build on their foundational understandings of various technologies, languages and frameworks that they had initially learned during in-class tutorials and workshops. Their learning on the project mainly occurred through researching, experimenting and problem solving—although they did require help from me from time to time, when they got stuck. As everyone in the team had different skills and strengths, they were also able to mentor and help each other with

challenges—with solutions often emerging through working and experimenting collaboratively. The also felt that the client was very supportive and easy to deal with, which, I should add, is not always the case.

Their Experiences Transitioning from the Course to Work

There was quite a variance in their experiences transitioning to work, as this depended a lot on the particular student's skill level and abilities, as well as the nature of the workplace that they went into. Higher-performing students were able to adapt relatively quickly to their new workplace situations, while less capable students took longer. Some workplaces used different and unfamiliar technologies, coding languages and frameworks—which required a longer learning period. Most students felt they were able to transfer their base knowledge, core skills, languages and approaches (learned during the course) to the new languages and frameworks they encountered in their work situations. They generally felt that as they had learned how to research and problem solve independently on the course, they were able to confidently learn new things as required in their work situations. Depending on the individual student, it took between two weeks and six months to become fully productive—with most feeling it took them around three months before they were able to contribute meaningfully.

Only one of the students received any formal mentoring when they first started work. Most of the other students did, however, receive informal mentoring in the form of having other experienced practitioners around of whom they could ask questions, and get help from, if needed. Mainly, however, they were just given jobs to do and got on with them. One student received no mentoring when they started and had no one around to learn from. They mainly learned on the job in response to the situation, through research, further formal learning courses and problem solving. Some felt that work teams were generally looser than those they had been involved in on the course. Within the workplace, they felt that they mainly worked as individuals on joint projects, rather than in a close, collaborative way. Three of the students were involved in startups that allowed them to determine and develop their own work practices, but found this to be quite difficult without guidance from more experienced practitioners.

Their Suggested Improvements for the Course

Based on their experience on the course, and their subsequent experience transitioning to the workplace, I asked the former students what improvements they would make to the course. Students who undertook the agile GDCT course generally felt that more constraints and guidance were required—especially in the early stages of the course—to make the projects more manageable and achievable. In other words, more teacher involvement was needed in the determination and direction of their projects. Based on their experiences transitioning to work, most students felt there needed to be more simulated and actual real-world situations and projects included within the course, to better prepare them for work. These included live briefs, real-world collaborations, feedback/critique sessions involving industry practitioners, work placements, internships and part-time work. Some felt there needed to be a greater focus on communication skills. These included how to present your ideas and work in a persuasive and confident way, and how to effectively manage stakeholder expectations. Almost all of them would have liked more collaborative team projects, with more exposure to project management and project planning approaches. These included specific agile development methodologies such as *scrum* and *kanban*, as well as specific collaboration tools. They also felt that more higher-level "design thinking" and problem-solving approaches needed to be covered in the course. One former student—who works as a developer in Silicon Valley—suggested introducing pair-programming, which they use in their workplace, as an effective way to develop good coding practices.

Their Ongoing Learning Experiences as Practitioners

As a central tenet of the agile learning approach is that learning is not just something that happens within formal learning courses within educational institutions, but is rather ongoing with practice, I was also interested to know more about their ongoing learning *as* practitioners within workplace situations. The most common experience was that learning in the workplace happens mainly through researching and solving problems encountered while working on projects. This can be characterized as a form of *just-in-time* learning in response to new and unfamiliar situations. Most workplaces tend to operate on an informal mentorship basis, where practitioners are able to ask for help from more experienced and knowledgeable colleagues. However, most felt there was an unspoken expectation to try and work through and solve problems by yourself—and only seek help when you are really stuck. In some workplaces, there

was a spontaneous sharing of new and interesting things amongst colleagues—as a community of practice.

In addition to in situ, just-in-time learning *in* practice, they also kept up to date through a combination of online resources and formal learning courses. Online resources included Coursera, EdX, Lynda.com, Codecademy, Stack Skills, Treehouse, Stack Overflow, industry email newsletters, blogs, forums and articles. One student took a further postgraduate paper in user-centric design at Auckland University of Technology [AUT], an undergraduate paper in statistics at Massey University, and short course in data analytics—all paid for by her employer. Another student completed a postgraduate diploma at AUT. The former student who works in Silicon Valley is involved in learning through pair programming within the workplace, as well as doing an online nano-degree through Udacity.

Response to the Tentative Nomadic Agile Learning Proposition

This is a summary of responses to my initial rough sketch and verbal explanation of the nomadic agile learning proposition. It was generally felt that there needed to be a balance between openness and structure, with students requiring some boundaries and guidance. They felt that students would need to shift their thinking about learning in order to cope with the openness, and that the open, self-directed nature of nomadic agile learning might not suit everyone. Generally, they thought that students would need to be self-motivated, have an open attitude to learning new things and be adaptive. As such, the nomadic agile approach might be more suitable for adult learners, who are more self-motivated and have life experience—rather than for younger school leavers, who might need more structure and external motivation. It was felt by some that moving around too much could potentially be unsettling and disorientating for students, and that it might be better for the course to have a fixed physical home space. A home space might provide a cohesive and connective nucleus that could bind the course together and provide a solid base—from which students could then branch out. If students have to continually find their way to new places in a completely nomadic way, it might create unnecessary anxiety. They all felt that the external pressure provided by deadlines and projects is an important motivating factor that still needs to be included in the course. It was also considered important for them to be able to present their work to other people for feedback and critique. In relation to work-integrated-learning (WIL) activities, it was felt to be beneficial for students to be involved with practitioners and work situations as part of

their learning. Having a flexible length course would allow for students to move through more quickly or slowly, depending on how quickly they get up to speed. Interestingly, all the former students involved in discussions felt that they would personally do well on the nomadic agile course but were not so sure about other people. One particular student wished things like this were available for them, rather than going to university and doing a commerce degree, as they felt they did not really fit into the traditional educational model and were not motivated by grades.

Some Initial Thoughts on the Student Perspective

A recurring point that was made was that a nomadic agile course may not necessarily suit everyone—as students would need to be self-motivated, have an open attitude and be adaptive. This leads to the question of whether the course should be restricted to only open, self-motivated people—through some sort of selection process—or whether part of the course's function might be to motivate, open and shift students' attitudes *through* the nomadic agile approach, and thereby expand their horizons. My thoughts are that, although restricting the intake to the course to only self-motivated people with open attitudes may well result in more successful outcomes—in terms of course completion and employment rates—this moves away from the underlying democratic and egalitarian values of inclusiveness and equal opportunity. As such, my personal preference is for a course that is open to a wider, more diverse group of people who are guided through their learning in such a way that their attitudes and motivation shift. From a pragmatist-enactivist perspective, motivation and agency are not strictly internal to the subject, but rather are distributed across the body-mind subject and their sociocultural-material environment. As such, they are both internal and external with the body-mind both acting on the environment, and in turn, being acted on (Gallagher, 2017; Dewey, 1929). In relation to the nomadic agile course, then, the course, as a sociocultural-material environment, co-determines—or at least, influences—the motivation and agency of the individual learners. In fact, motivating and expanding horizons is precisely what learning courses should be doing. This is consistent with Dewey's view that *growth* should be the main purpose of education (Biesta & Burbules, 2003).

However, student *aptitude* is another issue, especially in relation to the technical aspects of coding and programming, and this may well require some preselection or evaluation process. On a practical level, students could possibly undertake a foundational short pre-course to determine whether they have the aptitude and

interest to progress further. However, although aptitude is usually thought of as intrinsic ability, this too can be better thought of as being distributed across the body-mind and environment. In my teaching experience, technical orientations (i.e., attitudes and aptitudes) are at least partially the result of enculturation, and as such, can be potentially shifted in different sociocultural situations. Another recurring theme is the importance of structure and external pressure (i.e., deadlines, presentations, grades, attaining a qualification, etc.) in motivating students. However, I am not proposing a complete absence of structure but rather *fluid, flexible* structures. These might start with more traditional pedagogical approaches—such as tutorials, worked examples and workshops—but then progress to self-determined projects, and end up with simulated and actual work situations. In this way, it is the projects and work situations themselves that provide the necessary structure, rather than the course itself.

The point made about having a stable physical home space that is able to provide a solid base from which to branch out, is a valid one, and something that was also suggested by one of the teachers I interviewed. This becomes somewhere that students can return to, or fall back on, for support and a sense of belonging and place. This might be in the form of a flexible, open studio space that can be (re)arranged and (re)configured in different ways. This could allow for traditional tutorials and workshops, self-directed and collaborative project work, meetings and social spaces. In this way, students would be free to come and go, work remotely and participate in work-integrated learning activities. It could be possibly modelled on shared work spaces.

The Teacher Perspective

For the teacher perspective, I held discussions with five current and former teaching colleagues, all of whom I have worked with at various times since 2011. Two of them have taught in the same area of interactive and web design as me. One taught with me on the level 6 course and also participated in the development of the original agile learning approach. Two are current teaching colleagues, with another one being a former programme leader. The final one was a former academic leader who has taught on and developed multiple programmes, including in game development and ecommerce. The main areas that I was interested in finding out about were their views

on student learning, teaching, learning outcomes, assessment, issues and suggestions for improvement, work integrated learning and their response to the nomadic agile model. The following is a summary of their views from our discussions and again, as per the ethics approval, I have not used any names.

Their Views on Teaching and Learning

Although I did not ask them specifically about their epistemological beliefs, and they did not explicitly articulate any, they generally saw learning as being primarily student centered and student driven. From this, I inferred that they mainly held individualistic constructivist views in which students are primarily responsible for their own learning, as pro-active agents who construct their own knowledge. Consistent with this perspective, there was general agreement that students construct their knowledge mainly through experiential doing and problem solving. Although this predominantly involves self-directed project-based learning and reflective practice, teacher-led workshops, tutorials, worked examples and lectures still have their place for foundational learning and introductions to new topics, concepts, tools and coding languages, etc. They mostly shared my agile perspective that learning needs to be iterative and responsive to change, with student projects moving progressively from simple, smaller projects to larger, more complex projects. It was generally felt that learning needs to be approached in a holistic way—seamlessly integrating theory and practice—rather than just learning specific skills and tools out of context.

Also consistent with a general constructivist perspective, the teachers saw themselves primarily as learning facilitators or guides. However, they still felt that there needs to be room for teachers to teach in a more traditional way when required. That is, to run tutorials and workshops, work through examples and give lectures. However, rather than just the students learning from the teacher, learning was seen as being bi-directional—with both the teacher and the students learning in some way through their interactions. Being part of a supportive group of teachers was seen as being very important, as it allowed them to openly discuss and make decisions in response to the students and other variables—rather than just following a prescribed curriculum and pedagogy. There was a general preference expressed for a more hands-on teaching approach, whereby teachers get alongside students and actively work with them on projects, as co-developers.

One of teachers interviewed felt that the NZQA research requirements, for those teaching on bachelor's degrees, takes teachers away from teaching and diminishes the student learning experience—especially in practical, hands-on, applied domains. They also felt that the active involvement of teachers needs to extend across the student learning path—to include working collaboratively with students and industry practitioners on joint projects, and negotiating internships and work placements. The same person thought that individualized curricula, while maybe being better for the student, place more of a burden on the teacher. This in turn creates tensions with institutional requirements to keep teaching contact hours to a minimum, as well as having teachers actively involved in Performance-Based Research Fund (PBRF) research (Tertiary Education Commission Te Amorangi Mātauranga Matua, 2020).

Their Views on Defined Learning Outcomes

Generally, teachers expressed a preference for broader, more general learning outcomes, rather than being confined to specific skills. These allow for greater flexibility to respond to both the class group and the different individual learning outcomes that result from students choosing their own roles and direction. Interestingly, the notion of having defined learning outcomes at all was not questioned. Rather, they were seen as necessary and useful for defining the scope of a component and what is taught—although not necessarily what is learned. The teachers mostly thought that learning outcomes provide them with a solid framework, or guide, as a frame of reference. However, they preferred them to be written in plain language, so that both teachers and students can understand them easily. In relation to the design of learning approaches and programmes, one teacher felt there was a general issue with PTEs (NZQA, n.d.-c) designing courses around NZQA (NZQA, n.d.-b) and TEC (Tertiary Education Commission Te Amorangi Mātauranga Matua, n.d.) requirements, rather than the student learning experience.

Their Views on Assessment

Generally, it was felt that there needs to be some form of evaluation to determine if the students have reached a certain level of competency and capability, but not necessarily grading, as such. Assessment needs to be a more flexible and relative individual evaluation of a student's progress towards their own learning goals, rather than being measured against prescribed outcomes. However, there are questions about how student learning can actually be assessed if there are no fixed learning

outcomes. In this case, assessment would need to be relevant to the student's own individual learning path and outcomes. As such, grades, which are a relative measure of student learning against general learning outcomes, may not be appropriate. In the teachers' view, grades seem to be more important to students than employers, who tend to evaluate students by looking at their work and interviewing them—based on their own criteria. In relation to WIL activities, the learning outcomes, assessment criteria, and who actually does the assessing all need to be negotiated and agreed on in advance by the teacher, the student and the collaborating industry employers and practitioners.

Issues with Teaching and Learning Creative Technologies

A significant issue identified by teachers is the integrated technical and design complexity of creative technologies domains. From a teaching perspective, this creates a practical problem of how they resolve the tension between the so-called *soft* skills of UX design, design thinking and communication, and the *hard* skills of technical production and implementation. How to teach and learn soft skills— especially in relation to team work involving empathy, communication, respect and collaboration—was felt to be a major issue. A particular problem identified with group projects is that students lack the necessary interpersonal and organizational skills to function successfully. In contrast to work teams, student teams do not necessarily contain more experienced practitioners that can guide and mentor the less experienced team members. This lack of experience—especially in relation to empathy, communication, respect and collaboration—often leads to dysfunctional teams.

Variances in the skill and capability levels were considered to be an issue in more traditional structured approaches, but not so much in an agile approach, which allowed more for individual leaning outcomes and opportunities for further learning. Approaching teaching and learning in an agile way, however, created a certain amount of uncertainty that conflicted with institutional expectations and structures.

Views on Work Integrated Learning

It was generally felt that live industry briefs give the students the opportunity to work in a simulated studio environment with real clients, and broadens their horizons of what is possible. They provide opportunities for networking, which can lead to

internships and employment. However, the client often has a different understanding of the brief and expectations of the outcomes, which need to be resolved through discussion and negotiation. Some clients use the live brief as a way to evaluate students for internships and graduate programmes. Others use them for market research to get the perspectives of young people. Furthermore, the clients often retain the IP for the ideas and concepts generated by the students, which they are able to commercialize in their businesses. Hackathons give students the opportunity to work with more senior professionals and network with potential employers. They give employers the opportunity to evaluate students and can lead to internships and work. However, they are also potentially exploitative as they are often used to gain insights into how young people think, as well as generating new ideas—for which the organizers retain the IP.

In their experience developing WIL models and approaches within an undergraduate programme, one of the teachers also encountered an expectations gap between teachers and employers. In particular, they found that employers do not always have the patience, time and resources to mentor and guide students within workplaces. As workplaces operate primarily on a commercial basis, students on work placements and internships are expected to be able to contribute productively to commercial project outcomes. One possible way of approaching WIL activities would be for teachers to work collaboratively with students and industry practitioners to provide the mentoring and project management.

Their Suggested Improvements

A common suggestion was for more simulated work environments and situations, in which students work together in teams. This might operate in a similar way to an apprenticeship model, but within a controlled learning situation, rather than within actual workplaces. It would require (re)configuring physical learning spaces to emulate actual work studio environments—perhaps in the form of an open studio space involving hot desks and pods of desks, with separate meeting/workshop/tutorial spaces for break out activities. This could lead to work placements and internships— i.e., actual apprenticeships—once students have gained a certain level of competency and experience. As a way of improving team work, it was suggested that perhaps teachers and industry practitioners could work with students as team members or project managers on group projects.

Their Response to the Nomadic Agile Model

The role of the teacher needs to be given more emphasis, as the teacher/guide is potentially involved in some way with all the student's learning experiences—including the WIL activities. The course would need to consider what would work best for individual students and be flexible enough to cater for their individual requirements. For example, some students might need more structure, guidance and external motivation than others, which would require pushing them outside their comfort zones. It may be necessary to run an initial *learning approach* introductory course/workshop to open their minds to learning approaches that they may not have experienced before.

Some Initial Thoughts on the Teacher Perspectives

Firstly, as I have worked closely with most of these teachers at various times, these discussions need to be seen in the wider context of ongoing conversations and shared teaching practices involving many of these same themes. Consequently, the views expressed here are in many respects quite similar to mine. However, rather than thinking of them necessarily as *their* views or *my* views, it might be more appropriate to think of them as *our* views—as a community of practice, or inquiry. In other words, as shared understandings and practices that emerge from our shared histories, teaching activities and discourse. Notwithstanding the similarities, however, there are still some fundamental differences—particularly in relation our respective epistemological beliefs.

Secondly, the notion of *soft skills* can be quite ambiguous and difficult to pin down as to exactly what they are, yet alone how they can be learned. However, it seems to me that the way the term is used, these skills generally fall into two categories. The first is *social* skills—which might include communication, empathy and working in teams. The second category is *thinking* skills—which might include UX design, design thinking, problem solving and reflective practice. However, along with the so-called *hard* skills (i.e., those used in practical production), rather than regarding them as separate activities and skills, they all form part of integrated whole practice. From a pragmatist-enactivist perspective, the sociocultural practices and norms within a particular situation (including workplaces) are learned through transacting with that particular environment. In agile learning, as an iterative whole approach, students are

introduced to simple versions of the whole in an integrated way. This includes the tools, materials, practices and socioculture—all of which involve both soft and hard skills. For novice learners, the integrated wholes might be initially simulated—in a simple and playful way—and then iteratively become more complex as they progress to real-world projects and actual workplace situations. For example, this might entail initially working in pairs, as simple social groupings, that then develop into more complex teams, with specific roles and power relations. It is also consistent with the suggestion by teachers of creating simulated work environments along the lines of actual work studios. The process of moving through a series of progressively more complex whole practice situations also aligns with Dewey's (1938) view that for learning situations to be of genuine educative value, they need to lead to further learning situations in a process of continuous growth.

The Employer Perspective

For the employer perspective, I held discussions with two small web studio owners, a partner in a mid-size startup and a UX design practitioner who has mentored interns and graduates in a number of larger companies. The main areas that I was interested in finding out about were: what they look for in employees, their views on employing and mentoring graduates, mentoring students, ongoing workplace learning, internships and work placements, and their thoughts on participating in nomadic agile work-learning activities. As this is a relatively small sample and mainly involves smaller studios of between six and twelve employees, it should perhaps be considered more of a starting point for further discussions and negotiations with a larger and wider range of employers—should this research progress further to a pilot programme or change laboratory. However, these discussions do give an indication of the types of problems and issues that might need to be resolved. They also need be seen in the wider context of regular and ongoing discussions and shared activities with a much wider group of domain employers and practitioners. Again, as per the ethics approval, I have not used any names.

What Employers Look for in Employees

Not only do employees need some level of skill and experience in the specific areas they will be working in, but cultural fit, personality and attitude are just as, if not more,

important for employers. The employers interviewed generally preferred self-motivated, creative and critical thinkers who are good problem solvers. They also prefer employees with an open and flexible attitude to new ideas, approaches and learning new things. One studio prefers employees that are able to challenge each other and not be afraid of being wrong. When hiring new employees, rather than advertising for positions, they generally prefer to find them through word-of-mouth, recommendations and networking.

Their Views on Employing and Mentoring Graduates

Although graduates generally have practical skills and know-how, they lack real-world experience in commercial workplaces. However, they are generally more flexible, adaptable and malleable than more experienced employees. Juniors and interns can also bring fun, fresh ideas, perspectives and energy to the workplace. However, as it can take between three and six months before graduates become fully productive, they can be a burden during that period for other employees to train, supervise and mentor—especially in smaller studios. Larger employers tend to have more structured pathways in the form of internships and graduate programmes, although one smaller studio did have their own internship and training programme. Generally, smaller studios do not provide formal mentoring but do offer informal advice about professional development. However, they all felt it was important to have an open culture in which new graduate employees are able to ask questions or get help from anyone in the team if they need it.

Their Views on Ongoing Employee Workplace Learning

Most of the studios did not allocate specific time for employees to research and learn new technologies. Rather, employees learn mainly through researching and problem solving in relation to the current projects they are working on. Some of the employers provided subscriptions to paid online courses, but generally encouraged employees to keep up to date themselves through industry newsletters, blogs and magazine sites. They all felt that it was important for employees to be open to learning new things and that everyone should be able to learn from each other. One employer did, however, take a holistic approach to professional development—seeking to develop the whole person, rather than just focusing on work specific skills. As such, they allocate 15% of their employees' work time to professional development, in which they work on side projects.

Their Views on Student Internships and Work Placements

Generally, all the employers thought that internships are a good way of providing students with opportunities and exposure to the industry—as well as providing employers with an opportunity to evaluate students before they graduate. It was felt that student internships, as part of their course work, needed to be for at least 20 hours per week—in order for them to get the necessary experience they need to learn and become productive. None of those interviewed were in favour of unpaid student internships. However, there was less support for short-term student work placements, as they require a lot of supervision and the students are not very productive. For the other employees, mentoring and supervising graduates and interns disrupts their practice. It requires them to plan the intern's learning-work experience and find low-risk activities for them to work on. However, on the upside, it can help the mentor to become a better practitioner through having to make explicit and explain what, why and how they are doing what they do.

Thoughts on Participating in Nomadic Agile WIL Activities

Generally, all of the employers thought that it was a good idea for students to be involved with industry practitioners and real-world work situations, but that they would require some structure and guidance. Their main concerns were the extra burden it potentially placed on the workplace and practitioners (supervising and mentoring the students), as well as the students' ability to work in a self-directed and open way. Some interest was expressed in potentially being involved in integrated learning-work activities—i.e., collaborative real-world projects, work placements, internships, mentoring groups of students and running workshops—but it would depend on the specifics of how this would work in practice. They were generally open to the idea of collaborative projects, with the teacher involved, and possibly using their studio as a shared space to run workshops and tutorials. But again, it would depend on the specifics.

Some Initial Thoughts on the Employer Perspectives

As students move into the work-integrated phase of their learning, it will require open communication and negotiation between the workplaces, the teacher-facilitators and the students (as the participants in the shared learning-work activities) to establish and maintain shared understandings of the expectations, processes and outcomes for specific learning-work situations. Rather than just handing the students over to

employers and workplaces, the teacher-facilitators will need to take a more active role as brokers. An important requirement, from the employers' perspective, is to be able to evaluate students in work situations. This could effectively become part of their assessment—along with showing and talking about their portfolio of work.

From the employers' perspective, a major issue with work placements, internships and graduate programmes is around the overhead of training, supervising and mentoring students and interns—especially for smaller studios. This is something that needs to be discussed further with larger employers who have graduate and internship programmes in place. Consequently, there is the potential for tension between employers and employees, and possibly between established employees and the students, brought about by placing extra demands on employees as mentors and supervisors. Employees undertaking these roles may not necessarily have the pedagogical skills and understanding, or patience. Also, if they are required to be involved in designing these activities, they will need to be supported by both their employers and the teacher-facilitators.

Conclusion

To conclude, then—in this chapter, I have summarized the perspectives that I collected through a series of semi-formal discussions with the groups that I identified as the main participants in the learning and work activities. These were students, teachers and employers. In the discussions, I also presented my tentative proposition for a nomadic agile approach. As I mentioned at the start of this chapter, these collected perspectives are not intended to be exhaustive, or the sole basis of my understanding of the situation. Nor are they considered to be quantifiable data that can be objectively analyzed in some way. Rather, their purpose was to broaden my understanding of the problematic situation. I should also add that there are some obvious gaps and shortcomings in the collected perspectives, particularly in relation to the employer perspectives. Notwithstanding this issue, I feel that there is enough to work with at this at this stage—at least for the generalized discussion that follows in the next chapter. However, in relation to any further research—for example, implementing a nomadic agile course in practice as a pilot programme—more extensive discussions and negotiations with potential participating workplaces are needed.

Generally, I found that although there are differences in orientation between the various participant groups in relation to their different purposes, their views on what needed to be learned was very similar. They all felt that students needed to learn, not only *hard* technical skills, but also *soft* thinking, problem solving, social and communication skills. There was also a general consensus that students needed to have open, flexible attitudes, as well as be self-motivated and able to take the initiative. In relation to how these can be learned, there was also a general feeling that students needed to be more involved in practice/project situations—ranging from simulated work studio situations to actual workplaces—with a focus on working in teams. As such, learning was seen as ongoing with practice. The overall response to my tentative proposition for a nomadic agile learning approach was mixed. While some felt its open nature would allow students to explore their own directions, others had reservations about the lack of structure, and suggested that it might only suit self-motivated students. There was also concern expressed that moving around nomadically might be unsettling.

The question is, then, how can we design a learning approach that not only dissolves the walls between *hard* and *soft* skills within integrated whole practice, but also dissolves the walls between learning and work activities within integrated learning-work activities? From an expansive learning perspective, the nomadic agile course—involving students, teacher-facilitators, practitioners and employers—can be thought of as a new shared activity system, that emerges from the interaction between *learning* and *work* activity systems (see *Figure 7*, *Chapter 4*). As such, "a potentially shared or jointly constructed object" emerges (Engeström, 2001, p. 136). However, the object, or purpose, of the new shared activity system is not simply a merging of the respective objects of the constituent learning and work activity systems. Rather, consistent with a soft systems methodology approach, the shared object and practices need to accommodate the purposes and worldviews of all the participants involved. In other words, something that everyone can live with (Checkland & Poulter, 2010). This, then, leads to a more in-depth discussion of perspectives in *Chapter 7*.

Chapter 7

Discussion of Perspectives

In this chapter, I drill down more deeply and discuss the various aspects and issues arising from the collected perspectives—as summarized in the previous chapter. The discussions are not only in relation to the tentative proposition for a nomadic agile leaning approach, but also in relation to the enactivist-pragmatist onto-epistemology outlined in *Part One*. In addition to the perspectives of others, I also draw on my own wider experience and understandings as a teacher, practitioner, learner and former employer. The discussions involve both identifying common ground, as well as looking at how differences might be resolved, gaps closed, and walls dissolved—through possible shifts in perspective that lead to new shared understandings and practices. For practical purposes, the discussion is organized around four main themes that relate to each section. The first section addresses the purpose of the nomadic agile course—the *why*. The second section then looks at *what* needs to be learned, which I refer to as the *curriculum* (although not in a traditional sense of the term). The third section is concerned with the pedagogy—or *how* it is learned, and the final section looks at possible learning contexts for nomadic agile learning—the *where* and *when.* Although, for the purpose of this discussion, I have made a distinction here between the purpose, the curriculum, the pedagogy and learning contexts, from a pragmatist-enactivist perspective, they actually form a deeply intertwined whole that is not so easily separated out. In other words, *what* is learned and *how* it is learned is always situated and purposeful.

The Purpose: Why

From a Deweyan pragmatist perspective, according to Biesta & Burbules (2003), educational research is not just about the means, but must necessarily consider the aims, ends and purposes of education in an integrated way. However, rather than

being concerned with education generally, this inquiry is focused specifically on the learning involved in becoming a practitioner within the web domain of practice, which I am personally involved in. So, rather than necessarily making any claims about the general purpose of education, the purpose here specifically relates to the proposed nomadic agile *course* of learning—to become a web domain practitioner. However, having said that, the proposed course would not necessarily exist in isolation. It can be seen as sitting possibly within broader categories such as STEM education, design education, vocational education, tertiary education and adult education. On the other hand, depending on your perspective, it might be seen as sitting outside of the education category altogether—as a form of anti-education. Anyway, my approach here is not to try and impose a purpose on the course, but rather look at how the multiple, different, possible purposes of the various participants can be jointly accommodated.

However, what does it actually mean to *become* a practitioner? Learning does not just take place prior to becoming a practitioner, but is something ongoing *as* a practitioner. There is no hard boundary. *Becoming* a practitioner necessarily involves learning *as* a practitioner and learning *as* a practitioner is a continual *becoming-more-experienced*, as well as potentially changing direction. In other words, learning is both vertically and horizontally expansive (Engeström & Sannino, 2010). Viewed through the lens of Engeström's third generation activity theory, learning can be seen as taking place across, and between, teaching-learning activities and work activities—but situated within broader domain, community, societal and economic activity systems. As such, the purposes and ends need to be considered from multiple perspectives—not just from the perspective of the individual learner (becoming a practitioner) or the employer, wanting *work-ready* graduates. The perspectives of teachers, learning institutions (as organizing entities), local communities, government policy, society, the economy and even the living planet also all need to be taken into consideration. In this section, I will discuss the implications of the various collected perspectives of students, employers and teachers—but also look at how these might be brought together to form an integrated whole that also takes into consideration the wider contexts of learning organizations, communities, society, government, the economy and the planet.

In my experience, teaching on both level 6 and level 7 diploma courses, as well as on a bachelor's degree programme, the main purpose for students undertaking study is

to become a practitioner—although not necessarily to get a job as an employee. Some students have gone on to be self-employed freelancers or start their own businesses, while others have simply upskilled for a variety of reasons. Generally, however, the main purpose is vocational—to make their way in the world as a web practitioner. Within the general vocational goal, they have more specific individual goals and directions they want to pursue. They also come from a variety of different backgrounds. The one-year diploma courses generally attract slightly older adult learners, who are often changing careers or broadening their skills and understanding. Bachelor's degree students are generally younger school leavers who are just starting out. As they do not have previous work or study experience, they tend to be less certain about their purpose and goals. They often enrol in the course as a way of exploring and trying out different possibilities. Graduate diploma students mostly already have a bachelor's degree in a related area, and, in my experience, tend to have a clearer purpose for undertaking further study.

However, it is important not to conflate the student's purpose for undertaking a particular course of study with their actual achieved learning or vocational outcomes, as these cannot necessarily be known in advance. They might be initially motivated by some particular, general or vague end-in-view, but their final outcomes emerge through the course. In addition to the qualification-based diploma and degree courses, I have also developed and run part-time short courses in web development fundamentals that did not result in a qualification or involve any assessment. In these courses, only half the students actually completed them, and very few actually went on to become web practitioners. As far as I could tell, and I did not officially survey the students, the main reason for taking the course was really just to find out about how to make websites and see what it was all about. Nevertheless, whether the purpose for taking a course is specifically vocational or exploratory, the common general goal is to expand their horizon of possibilities in some way, as part of making their way in the world.

Any proposed learning course, then, needs to be flexible and open enough to cater for a wide range of potential students—from inexperienced school leavers (with vague general goals), through working-life experienced adults (changing careers or upskilling), to those with previous study experience (but not necessarily with working life experience). It also needs to cater for those who are curious and unsure—who might just want to find out more about the domain through exploring and

experimenting, and who might not have previous qualifications. Importantly, it needs to provide the opportunity for people to explore and discover their direction and purpose *through* the course.

Although there are a range of perspectives amongst individual industry employers, as a group they generally see the purpose of education as being to provide them with a sufficient supply of suitably skilled, *work ready* graduates (Pilgrim & Koppi, 2012). This view forms part of a more general neoliberal narrative which privileges private industry employers over public-funded educational institutions. On this view, the role of educational institutes is to serve the demands of both industry and the wider economy. From this perspective, students are seen as individual economic units— homo economicus—who invest in their education, often through taking out student loans, in return for potentially earning higher salaries in the future. Learning courses are consequently viewed as commodities that are packaged and sold to the student-consumer. This neoliberal narrative also permeates much of government and educational institution policy and management, often in tension and contradiction with teaching faculty (Oosterman et al., 2016).

The neoliberal commodification of education is not just confined to New Zealand, but is part of an ongoing global process to align higher education more closely with economic and business needs. This can be seen, for example, in the Bologna Process (BP), a European intergovernmental higher education reform process that places the notion of *employability* at the core of its purpose (Sin & Neave, 2016; Wihlborg & Teelken, 2014). "[C]ontemporary neoliberal states reoriented the task of higher education developing citizens' knowledge and skills and relabeled it as 'employability'" (Sin & Neave, 2016, p. 2). Furthermore, from this perspective, the responsibility for employability is seen to rest primarily with the individual student, with the educational institution reduced to the role of *service provider*, as a "resource for training... to equip graduates with ready-for-work skills" (Sin & Neave, 2016, p. 2). However, Sin & Neave (2016) note that the term *employability*, and what it entails, is understood differently from different perspectives. For the Bologna policy-makers themselves, it is seen as being primarily the responsibility of the individual students, with the purpose of higher education being to provide students with the means. For academics, the employability focus is seen as contributing to a reduction in academic quality. While employability is seen by students as important, they see it as being primarily the responsibility of the educational institution to provide them with the

necessary skills. For European business employers, the expectation is also for educational institutes to provide the students with necessary skills to find employment. However, for employers—given the uncertain and changing nature of the labour market and employment relationships—employability skills need to extend beyond subject-specific knowledge and training, to include "cross-disciplinary qualifications (methodological, social and personal competences)" (UNICE, as cited in Sin & Neave, 2016, p. 13). Although employers acknowledge some responsibility for student/graduate learning—for example, in relation to making their needs known to the higher educational institutes, and providing internships and on-the-job learning—they appear to be reluctant to go beyond training that meets their direct needs (Sin & Neave, 2016, p. 13).

For New Zealand employers, as well as according to the New Zealand Qualifications Framework, it is also the role and responsibility of educational institutions to consult with employers as to the particular "knowledge, skills, and attributes" (NZQA, 2016) they require, in order to provide them with work-ready graduates. As mentioned in *Chapter 5*, in "An Open Letter to the New Zealand Public" (2017), one hundred New Zealand companies question the value of tertiary qualifications altogether. They suggest that, as educational institutions are not providing them with sufficient suitably-skilled employees, their employees might be better off learning on-the-job. Although their suggestion that institutions and qualifications be removed from the process altogether might appear to align with my own proposition for learning outside the constraints of qualifications and institutions, there is a difference. In contrast to the nomadic agile approach, this employer perspective devalues teaching and learning altogether, and offers no alternative approach other than learning on-the-job. In an interesting twist, however, it was subsequently reported that technology industry employers actually *do* prefer employees with tertiary qualifications after all. It turned out that many of the vacancies posted on the Trade Me "No Qualifications Required" section were actually for "labourers, supermarket check-out operators and low-level administrators for roles paying less than $25 an hour" (Pullar-Strecker, 2018). In the article, Ruth McDavitt, who runs the *Summer of Tech* internship programme for tertiary students, is quoted as saying "I am not saying tertiary qualifications are a perfect match for what the skills might be, but it is very rare for people to be work-ready for high-tech jobs straight out of school – they do need some form of higher education" (McDavitt, as cited in Pullar-Strecker, 2018).

Pilgrim & Koppi (2012) have also noted tensions between industry employers and academia over work placements and internships, especially in relation to the expectation of "work readiness," with employers preferring to only take on high-performing students for these positions. This does raise an important point though—not all students are necessarily ready or suitable for work placements or internships at the same stage of their learning trajectory. Consequently, Pilgrim & Koppi (2012) suggest that in order to resolve this tension, a shared understanding between employers and teachers needs to be reached for a wider range of innovative, in situ and virtual WIL experiences.

However, what does being *work ready* actually mean, anyway? Even the very notion of work readiness is problematic. Often, institutions and specific learning programmes engage with industry advisory boards and panels who make recommendations as to what skills and attributes they think graduates should have. These are usually a mixture of industry-specific hard skills and more general soft skills, such as communication, social and thinking skills. However, the expectation that students can simply do a course and step straight into a work situation is not only unrealistic, it shows a lack of awareness by employers of what it actually means to *learn* and *know*. This is also an abdication of responsibility by employers of their role in the learning-work process. This expectation of work readiness also does not take into consideration the large variance in technologies and practices across different domain workplaces. From my discussions with students and employers, I found that it usually takes between three and six months for a new graduate to become productive. It is during this period that the graduates learn the specific technologies and practices of that particular workplace—as well as become socialized and enculturated within the workplace culture. Rather than there being a hard boundary separating the learning course from work, learning is ongoing and continuous across the boundary. Even for experienced practitioners starting a new job, there is always an initial learning period in any new workplace—as well as ongoing learning.

Following Patrick, Peach, & Pocknee's (2009) call for a "stakeholder integrated approach" in *The WIL report: A national scoping study*, industry employers need to become more active participants. Rather than sitting at the end of educational processes making demands, they perhaps need to collaborate more *with* teachers and institutions *in* the process of facilitating *becoming-a-practitioner*. This would require employers to have a greater awareness of what teaching and learning actually

entails—especially in relation to the learning that takes place within workplaces, such as internships, work placements and graduate programmes. Taking a pragmatist-enactivist perspective, as learning is fundamentally situational, ultimately the students can only become *work ready* by actively participating and learning within work situations. This raises the question of what an integrated approach might need to involve. In particular, whether it would be better negotiated at the local level between individual employers and student-graduates—with expectations and contexts being brokered by teacher-facilitators—or as a generalized prescribed framework.

However, work and workplaces do not necessary entail a stable employee-business relationship in a fixed location. Work, for example, can be paid or unpaid. Practitioners might be employees, but they can also be self-employed *gig-economy* workers, entrepreneurs, hobbyists, teachers or students. Employers, as well, are not only private businesses. They can also be not-for-profit organizations, social enterprises, government agencies or even the (self-employed) practitioner themselves. Workplaces can also take a variety of different forms, other than the traditional studio. In addition to shared workspaces such as Generator (Generator, n.d.), practitioners are able to work in nomadic ways across multiple locations—including cafés, libraries, community spaces, public transport, cars and private homes. As such, it is necessary to take into consideration all the possible ways that practitioners might work and apply their practice—as well as the different possible forms workplaces and employment can take.

From a pragmatist-enactivist perspective, it is not only the learners who are transformed through their transactions within workplace situations. The workplaces themselves, as intersubjective cultures and practices, are also changed in some way. By extension, the wider domain of practice, as a dynamic emergence of the interactions between the multiple contexts that constitute the domain, is also changed.

Nora Bateson (2015) proposes the word *symmathesy* to denote dynamical ecological systems—in contrast to engineering systems—in which not only do individual subjects and their contexts mutually learn together in a dynamic interrelationality, the subject is simultaneously embedded in multiple intersecting and interacting contexts. As a way of understanding this complex, dynamic, interrelational living world of multi-layered shiftings, symmathesy can refer to both the learning entities and the interactional

learning processes. In Bateson's view, there is no difference between learning and life, and there is never a time when something living is not learning. She defines symmathesy in the following way:

> Symmathesy (Noun): An entity composed by contextual mutual learning through interaction. This process of interaction and mutual learning takes place in living entities at larger or smaller scales of symmathesy.
>
> Symmathesy (Verb): The process of interaction, in its multiple variables, that produces a mutual learning context.
> (Bateson, 2015, p. 2)

In relation to workplace learning, it is not just a matter of students and graduates being inducted and enculturated into stable workplace practices, and domain knowledge. Not only are the workplaces and the wider domain of practice in a continual state of flux, the students and graduates contribute to that change—both through what they bring from other learning contexts, and through their ongoing transformation. By actively participating in the workplace symmathesy, students/graduates become both enculturated and habituated in intersubjective workplace practices and cultures, as well as actively contribute to the workplace, through their dynamical transactions. As well as skills and knowing, they are also able to contribute energy, personality, freshness, attitudes and perspectives. In other words, they can have a renewing, refreshing and reconstructing effect on individual workplace symmathesies.

Although there is a variance in teacher perspectives, from my discussions, teachers generally acknowledge the vocational purpose of specific learning courses, but also take a broader view. This includes not only the student's immediate personal goals of becoming a practitioner. It also includes developing more general thinking, problem solving, research and communication skills—that enable them to deal with and adapt to changing working and life situations. In my experience, teachers tend to make a distinction between *hard* technical skills (e.g., using particular software and techniques) and *soft* thinking skills (e.g., reflection, problem solving and research). Communication and social skills, which are also thought of as *soft*, appear to be regarded as something separate again from technical doing and thinking. Furthermore, in my experience, teachers tend to privilege the conceptual (abstract) over the practical (concrete). Abstract conceptual thinking is regarded to operate somehow at a *higher* level than practice. The consequence of this is that the teaching

of practical technical skills is often neglected and dismissed as something that students can learn by themselves.

In contrast, from a pragmatist-enactivist perspective, all vocational practices necessarily involve integrated thinking, doing and communicating within sociocultural-material environments. Furthermore, the difference in the thinking involved in practical concrete situations and abstract conceptual situations is not one of degree. Rather, it involves different objects of thought (consciousness). As Dewey warns us:

> [T]here is danger of the isolation of intellectual activity from the ordinary affairs of life. Teacher and student alike tend to set up a chasm between logical thought as something abstract and remote, and the specific and concrete demands of everyday events. The abstract tends to become so aloof, so far away from application, as to be cut loose from practical and moral bearing. (Dewey, 2013/1910, p. 31)

Furthermore, for Dewey, any domain or activity can be considered intellectual, not just traditional academic domains.

> In any event, it is desirable that the teacher should rid himself of the notion that "thinking" is a single, unalterable faculty; that he should recognize that it is a term denoting the various ways in which things acquire significance. It is desirable to expel also the kindred notion that some subjects are inherently "intellectual," and hence possessed of an almost magical power to train the faculty of thought…Thinking is specific, in that different things suggest their own appropriate meanings, tell their own unique stories, and in that they do this in very different ways with different persons… Thinking is not like a sausage machine which reduces all materials indifferently to one marketable commodity, but is a power of following up and linking together the specific suggestions that specific things arouse. Accordingly, any subject, from Greek to cooking, and from drawing to mathematics is intellectual, if intellectual at all, not in its fixed inner structure, but in its function—in its power to start and direct significant inquiry and reflection. (Dewey, 2013/1910, p. 25)

The significance for the web domain of practice, as with other hands-on creative technology domains, is that technical making and designing are often thought of as two separate activities. Designing is generally associated with creative and abstract thinking, while making is often considered to be merely the application of routine technical skills. This is particularly evident in the distinction between designers and developers, whereby designers are thought of as creatives and developers as technicians. However, following Dewey, all practices can be seen as involving phases

of creative thinking and technical application. The only difference is in the object of the thinking. Even so-called hard technical problems, such as programming logic problems, still involve creative experimentation and imagination in "linking together the specific suggestions that specific things arouse" (Dewey, 2013/1910, p. 25).

Although on the surface there might appear to be an *expectations gap* between employer and teacher perspectives, I believe that these are actually a lot closer than they appear. For example, both teachers and employers acknowledge the value of creative thinking, problem-solving and openness to new things—in addition to practical technical skills. Rather, I suggest that the gap actually lies in the perceived dualism itself—between thinking and doing. Employers tend to emphasize practical skills, while teachers emphasize thinking skills. Employers, with their focus on shorter-term commercial objectives, expect interns and graduates to be able to contribute in practical and productive ways as soon as possible. Teachers, on the other hand, take a longer-term view of preparing students, not only for immediate working life, but also for ongoing working life—as well as life in general. However, following Dewey, rather than viewing practical technical skills as being separate from and less intellectual than abstract thinking skills, the walls can be dissolved within a shared understanding of integrated learning and practice.

Conclusion (Purpose)

To conclude this first section, then, although the purpose of the proposed nomadic agile learning course is mainly (although not entirely) vocational, rather than necessarily privileging one perspective over another, all the potential purposes—from the student, teacher and employer perspectives—need to somehow be accommodated. Firstly, the course needs to be able provide students with the opportunity to develop the necessary integrated thinking, doing and communication skills in order to gain employment as professional practitioners—regardless of their backgrounds or the form of employment. It also needs to provide opportunities for exploration and discovery, for people who want to find out more about the domain. Secondly, it needs to be able to provide employers with skilled graduates. However, rather than necessarily being *work ready*, as such, they are at least able to adapt and grow into productive practitioners relatively quickly within workplace situations. Thirdly, it needs to provide students with ongoing learning habits and tools—so they can continually adapt, adjust and attune to the rapidly changing and emerging work-

world. This includes adapting and attuning to changing life situations. In this way, it is possible to follow Bateson (2015) and her notion of *symmathesy*, in saying that the purpose of both education in general, and of the proposed nomadic agile approach, is *for life.*

This purpose is similar to the mission of Finnish universities of applied sciences, to "provide higher professional education based on the requirements of the working life and its development" through working in "close co-operation with regional economy and organizations and applied research on subjects that support the expectations of working life" (Polytechnics Act 2003/351, s4, as cited in Taatila & Raij, 2012, p. 831). This provides for a more balanced integration and accommodation of the purposes of the individual learner, employers, the local community and the economy—dissolving the boundaries between them. In this way, the human learner is considered as both an individual subjectivity making their way in the (work) world, and as part of multiple intersubjective communities that they contribute to and sustain. Although it does not solely privilege the so-called industry, it does incorporate their requirements as an essential part of the integrated whole.

The Curriculum: What Needs to be Learned

The challenge for vocational courses in creative technologies domains is threefold. Firstly, the wide variance in the practices, tools, technologies and cultures amongst different workplaces means that it is not possible for learners to be work-ready, as such, for all workplaces. Secondly, creative technologies domains are continually and rapidly changing—with new tools, technologies, practices and specializations continually emerging. Rather than the domain of practice and individual workplaces being stable contexts into which novices can be simply inducted, they are continually and dynamically unfolding. Thirdly, there are a variety of specializations and roles within particular domains and workplaces that require different skills and understanding. Yet at the same time they require a shared understanding—both of each other's roles, and the relationship between them—within whole projects and workplaces. The collaborative nature of project teams and workplaces also requires effective communication skills and social sensitivity towards others.

In my discussions with former students, teaching colleagues and domain employers, there was generally a distinction made between *hard* practical skills, or technical know-how*,* and so-called *soft* skills. Soft skills are a rather broad and ambiguous category, but essentially refer to everything that is not considered practical know-how. Soft skills include both interpersonal collaborative skills, such as the ability to communicate effectively and work in teams, as well as problem-solving and thinking skills, such as creative and critical thinking, researching, reasoning and reflecting. However, from a Deweyan pragmatist perspective, this distinction is a false dichotomy. For Dewey, our being-in-the-world is always an embodied practical engagement in situations that are both material and sociocultural—including intersubjective transactions with other people. Following Dewey's theory of inquiry, problem-solving is not something that can be separated from practical doing, or decontextualized. Rather, it is an integrated process of reflection and action within problematic situations that often involve people working together in a community of inquiry.

Not surprisingly, the specific tools, technologies and practices that students need to learn depend on who you talk to. However, there is general agreement—amongst employers, students, practitioners and teachers—that practitioners need to be good communicators, work well in teams, be creative problem solvers, and be able (and have the confidence) to take initiative and challenge existing practices. This was reflected in the personality traits that employers preferred in employees, which included being self-motivated, enterprising, creative, flexible, open and taking initiative.

Former students—now working as practitioners—generally found that the core tools, technologies and practices that they learned during the course were able to be built on, transferred or adapted to their specific workplace situations. They also felt that the open, agile nature of the course had given them the confidence to learn and adapt to new and unfamiliar situations. However, some felt that they were underprepared for working in teams, as well as for approaching more complex user experience situations. They thought that it would have been helpful to have been exposed to more group work, and what they called *higher-level* problem-solving approaches, such as *design thinking*. Teachers also felt it was important to provide students with more general approaches to learning and problem solving—not only to be able to

adapt to different workplaces within a particular domain, but also to adapt to different domains and possible careers over their working life.

In this section, I will discuss each of these aspects in more detail. However, rather than treating them as separate defined and quantifiable learning outcomes, they are considered holistically as an integrated, situated and dynamic *practitioner-knowing.* By viewing practice as an integrated whole; tools, technologies, practices, communication, problem solving, design thinking, and team work can all be understood in relation to each other—within particular sociocultural-material work situations. In other words, they are all integrated and co-constituting aspects of whole situations. I will touch on the pedagogical implications where necessary, but will discuss these in more detail in the next section.

I will start with core foundational tools, technologies and practices, and discuss how these necessarily involve an integrated continuum of doing, thinking, communication and problem solving. Beyond these foundations, as projects scale up and become more complex, roles become more specialized and practitioners work in teams that require a greater level of intersubjective coordination and social interaction. This leads to a discussion about the nature of team work and the problems with student group projects, in relation to preparing students for work teams. One issue that arises in work teams is the perceived dichotomy between user experience (UX) design and technical development. Even at a foundational level, when students are working on individual projects there is a perceived separation between UX design thinking and technical making. This then leads to a more detailed discussion about problem solving in general, as well as *design thinking*, as a specific problem-solving approach to ill-defined design problems. In particular, I discuss how *design thinking* might be more accurately reconceived as *design practice*.

Tools, Technologies and Practices

As already mentioned, the wider web and interactive design domain is made up of a variety of roles and specialties. These generally fall into the categories of user experience (UX) design (which includes user interface [UI] design), front-end development, front-end programming (also known as front-end engineering), back-end development, and project management (sometimes referred to as digital production). These may vary depending on whether the interactive product being

developed is a website, a web app or an app. For this discussion, however, I will focus mainly on the web domain of practice involving the creation of websites and web apps. I note though that these roles and areas do not necessarily have hard boundaries, with individual practitioners often working across different roles—especially in smaller workplaces. In medium to large sized workplaces, particularly on larger projects, practitioners tend to have more specialized roles. Regardless of which roles students end up performing, it is beneficial for them to have a general understanding of the whole domain of practice, as well as how the various parts relate to each other. Not only does this provide the context for their specific roles and practices, it gives individual practitioners an empathetic and practical understanding of each other's roles—as well as shared languages and conceptual framings with which they are able to communicate and collaborate with each other within project teams.

In my original agile learning approach (Stevens, 2013), influenced *by learning by wholes* (Perkins, 2009), all students gain an initial foundational understanding of what websites are and how they are created, in an iterative whole way. This starts with the making of simple whole websites and then progressively iterates through the creation of more complex whole websites and web apps. For example, we might start by creating a simple HTML page with text only and no styling. We then consider basic UX issues such as readability and typographical hierarchy, and introduce CSS styling to improve these. Even at this early stage, students can begin to make connections and understand relationships—for example, between the CSS code and the visual appearance of the webpage in the browser. They also start to think about the user's experience, both in relation to the visual aesthetic and as a form of communication. As we progressively iterate through more complex whole websites, we introduce concepts such as *responsive design*, more advanced CSS techniques, JavaScript interactivity, databases, back-end programming, etc.—but always within the context of the whole user experience.

The important point to note is that the tools, technologies and coding languages are not things that are learned separately, in isolation. Rather, they are always learned together in a whole integrated way and are always situated in a user experience. Not only are these things instrumental and connected in relation to the technical workings of a website or web app, they also contribute to the overall user experience—both aesthetically (how it looks) and functionally (how it works). Of course, by following

Dewey's broader understanding of aesthetics—as the primary affective quality of experience—then all user experience, including how it works, has a felt aesthetic quality. Within creative technology practices, tools and technologies can be considered to be mediating artefacts (Vygotsky, 1978) or environmental affordances (Gibson, 1977; Johnson, 2007; Gallagher, 2017), with which practitioners experientially transact, or have *conversations* with (Schön, 1992). In turn, practices involving tool and technology use take place within broader sociocultural-material situations. As such, the *knowing* and *learning* that is taking place is always multi-layered and integrated. For example, the student not only learns the lexicon and syntax of coding languages—they also learn how to use code editing tools to write the code, how they relate to each other, their instrumentalities (how they work and what results they produce), the best practices for writing code and organising their files, how servers work and how to transfer files etc. At the same time, they are also learning about UX and UI design—through considering the purpose of the site, the users and their goals, user story maps, the visual aesthetic, information and content architecture, wireframes, prototypes and user testing, etc. The technical implementation influences the UX and the UX design, in turn, influences the technical implementation. They co-determine each other.

Individual learning is also influenced by, and in turn influences, the sociocultural-material situation involving the cohort of students, the teacher and the institution. Students learn together with the teacher, and each other, as a *community of learners*. They communicate, share understandings and help each other. From this perspective, the so-called soft skills of communication and social interaction are not things that are learned separately, out of context. Rather, they are deeply intertwined and integrated in all sociocultural situations and practices. Like other forms of knowing activity, they too are learned through doing—through interacting with other people in different situations, particularly in team project situations.

Working in Teams and Groups

Although students, employers and teachers all agree that being able to work with other people in groups and teams is essential, there appear to be different understandings about what this actually entails, as well as how students and practitioners become good at it. While groups can refer to any grouping of people, including cohorts of learners and communities of practice, teams are usually centered

around particular projects with a shared objective. From my discussions, students generally felt underprepared for the social and cultural aspects of workplaces, and felt that they would have benefited from more team project work during the course. However, in my experience both working in teams and organising student team projects, the main issue is that every situation is different. From a pragmatist-enactivist perspective, the culture and dynamics of any group emerges from a combination of the dynamical transactions within the group activity, and its various situated contexts. In relation to interpersonal interactions, working in groups requires a flexible and open attitude to others, sensitivity to social situations and effective communication. Groups and teams also require at least some level of organization and leadership. For example, this might involve defining the team hierarchy, setting the objectives, defining roles, allocating tasks and timeframes, establishing team rules and norms and resolving conflict. In work situations, teams are not necessarily fixed or stable, but are often formed, reformed and reconfigured in response to project and other workplace requirements. Not only do practitioners with particular specializations come and go from project teams, they may also work simultaneously across multiple teams. In addition to project-based teams, they might also be part of specialization groups such as a community of front-end developers—as a form of community of practice (Wenger, 1998). At a higher organizational level, the various project teams and communities of practice are all situated within the broader workplace organizations. Each workplace has their own collective culture, values, practices, roles, norms and political/power relations—all of which the individual practitioner has to continually negotiate and attune to.

It is not simply a matter of learning how to work in teams and then applying what has been learned to all group situations. Rather, because situations involving other people are necessarily unstable and messy, what needs to be learned is how to adapt, adjust and attune to the dynamically unfolding intersubjective situations—as a process of functional coordination. In other words, there is no fixed way to behave in all groups. Rather, through their accumulated experience of actually working in groups, in both learning and work situations, students and practitioners are able to develop habits, practical wisdom and strategies for negotiating group situations. In short, they learn through accumulated experience of working in groups. The question then becomes: how can group projects be effectively configured as learning situations that are able to provide the necessary experience to prepare students for workplace teams? In this regard it is possible to turn to Dewey's understanding of communication, as the

coordination of shared activity involving an openness to the other. Through their intersubjective transactional experiences, which include not only language but also intercorporeality and interaffectivity (Fuchs, 2016), all the participants are transformed in some way.

I will discuss the pedagogical problems with existing approaches to group work, and possible ways forward, in more detail in the next section. Essentially, though, there is a disconnect between group work in formal learning situations and project teams in work situations. Workplace teams are formed and reformed around specific project outcomes and the specific skills and roles required. They are also situated within more general workplace cultures, norms, practices and structures. In contrast, although learning groups can be put together in various ways (e.g., randomized, socially engineered or self-organized), they are usually made up of students without a lot of previous group experience. Consequently, at least in my experience, they tend to lack organizational structure and social sensitivity to each other. One way that this might be improved is for more experienced teachers, practitioners or peers to work *with* the students on their group projects—at least in the project management role. I will discuss an example of this in the next chapter, drawn from my own experience project managing a student group project.

Problem Solving

Problem solving is often considered as a core skill that students and practitioners need to have, as if it is some form of generalized reasoning approach that can be learned and then applied to different problems, or problematic situations. However, often problems are not easily definable, able to be solved, or necessarily even problems at all. Following Dewey's general theory of inquiry, rather than thinking in terms of problems that can be solved, it is better to approach them as indeterminate or problematic situations that can be resolved or improved—but only contingently for that situation. The notion of problem *resolving* still allows for the solving of *hard* technical or logic problems—but it allows more broadly for resolving, or improving, the complex, ill-defined problematic situations that might be encountered in UX design and workplaces, including working in teams.

To briefly recap, at the core of Dewey's pragmatism, and the basis for his theory of inquiry, is his notion of *experience*, which for human organisms is the dynamical

transaction between the habituated and enculturated body-mind and their sociocultural-material environment. Taken together, the organism in transaction with their environment forms the *situation*. However, rather than being a separate entity that is *in* the situation, the organism is an integral part that co-constitutes the situation, along with the environment. When the organism is in a state of integrated equilibrium, or flow, it can be said to be in *knowing* transaction with the environment. This is what Schön (1992) has in mind with his notion of *knowing-in-action*. However, when there is a breakdown in the transactional flow, and the existing body-mind habits do not work, the situation becomes problematic, and thinking arises. However, rather than being something separate from, or superimposed on, experience, thinking is a mode of experience in which the subject is in transaction with conceptual objects. For pragmatists, thinking is an activity—it is something we do. For both Dewey and Schön, the process of resolving problematic situations, which includes both hard problems and complex messy problems, is always an integrated process of reflection and overt bodily action.

Through reflecting on the conditions of the situation, tentative propositions present or suggest themselves. These may be further reflected on, and, depending on the nature and complexity of the situation, tested in action. If they work, then the situation is resolved, the transactional flow is restored, and a new or deeper understanding emerges. It is important to mention that problematic situations are not necessarily resolved solely through processes of deductive and inductive reasoning—they also involve abductive reasoning. It is additionally an embodied process, with the problematic situation initially being felt affectively in the body, as an experiential (aesthetic) quality. For Dewey and Mead, it is this emotionally felt *indeterminate* or *problematic* quality of the situation that provides the impulse for acting to resolve it (Simpson, 2009; Johnson, 2007). On the pragmatist view, emotions and feelings are not separate from thinking. Rather, emotional responses to problematic situations provide the impulse for thinking and attempting to make sense of the situation. Furthermore, thinking and understanding themselves—as body-mind activities and modes of experience—have an affective, or aesthetic, quality (Johnson, 2007).

However, although Dewey's theory of inquiry provides a general framing for understanding how problematic situations are resolved, for our purposes—in examining the different types of problem resolving involved in the web domain— perhaps a more nuanced understanding is required. For Dewey, the theory of inquiry

applies equally to all problematic situations—from relatively small and quickly resolved momentary disjunctions in the flow of action, all the way up to more complex and messy problematic situations that require in-depth and longer-scale inquiry to improve. The process of inquiry, however, is seen to have the same essential character in all cases. It can also be seen to extend below the level of conscious awareness, involving embodied adjustments and attunements to environmental changes and uncertainty. An example of this is the situated, skillful habits of ultraendurance athletes (Ilundáin-Agurruza et al., 2018) discussed in *Chapter 3*.

In his characterization of design practice and designing, Schön (1992) makes a distinction between the more immediate back-and-forth of *knowing-in-action* and *reflection-in-action*, and the longer timescale reflective practice involved in resolving contradictions and tensions at the practice level. Although Dewey might say that the processes of reflection involved in both cases are essentially the same—and that it is only the intentional object, or attentional focus, that is different—there is still a useful distinction to be made between the different types of knowing and thinking involved over different timescales. These include subconscious embodied experience, present moment and immediate conscious experience and longer timescale inquiry. I suggested earlier in *Chapter 3* that Varela's differentiated timescales, as outlined by Gallagher (2017), might provide a useful way to understand these differences. Before moving on, I will briefly recap these, and how they might be used to reconceive Schön's understanding of reflective practice.

Varela (1999) posits that cognitive processes operate over three distinct timescales— the elementary scale (10–100 milliseconds), the integrative scale (.5–3 seconds) and the narrative scale (above 3 seconds). Neuronal and cellular processes taking place at the sub-personal elementary scale are integrated within the integrative scale as the conscious experienced present. These in turn are woven into longer narratives involving memory and planning within the narrative scale (Gallagher, 2017, pp. 8–9). However, I should point out that although this distinction provides a useful way of understanding how subconscious embodied cognitive processes break through into conscious awareness as perceptions, and persist over time as meanings, there are not necessarily hard boundaries between the different timescales. Rather, they form a continuum of timescales that conceivably extends down as far as the molecular, atomic and sub-atomic processes (within cellular and neuronal processes), and all the way back up to varying length narrative timescales. Gallagher (2017) suggests they

might also include developmental and evolutionary timescales, to which I propose we could possibly add cosmological timescales.

From this perspective, then, Schön's notions of *knowing-in-action* and *reflection-in-action* can provide a useful account of problem solving at the integrative *present-moment* timescale. As I proposed earlier though, knowing-*in*-action, in strictly Deweyan terms, might be better characterized as knowing-*as*-action—in which the habituated and enculturated body-mind is in transaction with familiar patterns and regularities, within its environment. However, even within this apparently seamless flow of knowing action, problems and uncertainties are continually being encountered and resolved, within the elementary timescale, that we are not necessarily conscious of. For example, these might include bodily adjustments and attunements to environmental perturbations and irregularities, such as occur when walking or riding a bike. In these activities, our bodies make fine-tuned adjustments to different surfaces and terrains while maintaining continual integrated action. As all situations are not only different, but also in a perpetual state of spatial and temporal unfolding, then all knowing action (over all timescales) must necessarily involve some form of reflection—although not necessarily conscious. In other words, all transactional experience, over all timescales, involves both overt action and reflection. Schön's reflection-*in*-action, which is also better understood as reflection-*as*-action, occurs when the body-mind encounters slightly larger problems, that are too big to be completely resolved within the elementary timescale. Consequently, they break through into conscious awareness—even if only momentarily. As such, Schön's metaphorical *conversation with the situation*, which is also more accurately conceived as a conversation *in* the situation, can be seen as taking place across multiple timescales—including subconscious conversations between the body-mind and its environment.

In relation to what Schön refers to as *reflective practice*, then, involving reflecting on knowing-in-action and reflection-in-action, this can be understood as taking place within the narrative timescale. However, reflection within the narrative scale is not just restricted to reflecting on practices. Rather, it also includes reflection on a continuum of problems, uncertainties, unfamiliarities, perturbations and disjunctions—ranging from relatively simple to complex problematic situations. Common to all indeterminate situations, though, is a *trying-to-make-sense* of the situation—whether this is at the sub-personal level of physiological adjustments and attunements, the present-moment level of Schönean reflection-in-action, or at the longer timescales of narrative

sense-making. The important point is that cognitive processes over longer timescales are complex and dynamical entanglements of multiple processes over shorter timescales. As such, all situations involve multiple processes of inquiry taking place simultaneously over multiple timescales.

Bringing this back to the design and development of websites and web apps, then, all problem solving—whether it relates to coding and programming, UX or social relations within groups and the workplace—can be framed as the resolving of uncertain or indeterminate situations through a Deweyan process of inquiry. Reframed in this way, problem *resolving* necessarily involves cognitive processes happening over multiple timescales—as well as the consideration of multiple, and often complex, material and sociocultural conditions. All of these cognitive processes involve intertwined experiential modes of overt action, thinking, feeling, reasoning, imagining and remembering. The pedagogical implications are that students need to learn to resolve problems through experiencing uncertain situations and resolving them. In other words, they need to learn to problem resolve by problem resolving. However, rather than being separate from practice, the process of inquiry—both as short-timescale experimental learning, and as longer-timescale researching and designing—*is* the primary mode of practice. In other words, the process of working things out and making sense of situations is the core of design and development practice.

This does not mean, however, that students should necessarily only work things out for themselves—even though this might be the situation that they most often find themselves in. There are established and emerging problem-resolving approaches for particular contexts, which can be shown to them by more experienced practitioners. These might include troubleshooting and debugging tools and techniques (for coding and programming), design thinking/practice (as a UX design inquiry approach), as well as agile and lean development methodologies. They can also ask and seek help from more experienced practitioners. In formal learning situations, these might include other students and teachers—while in work situations, they could be work colleagues and mentors. In addition, they are able to find out what they need to know through online tutorials, blogs, videos and community forums. In short, resolving problematic situations includes both finding things out and working things out.

Furthermore, the problem-resolving process does not just result in the formation and reformation of habits. Problem resolving too is a habit, or habits, that are continually

being formed and reformed through practice. Methods and approaches to problem resolving are not only learned for particular contexts. Through their accumulated experience of resolving problems, students and practitioners develop problem resolving concepts and habits. These can then be used as tools to resolve future problematic situations that they might encounter, in other contexts. In addition to learning how to resolve problems, the process of inquiry also leads to learning about the conditions of the situation being resolved. In this way, problem resolving is not only what is being learned, it is the experimental learning and inquiry process itself.

Finally, it is worth making the point that Dewey's processes of experimental learning and inquiry, Schön's reflective practice and enactivist understandings of cognition, are not methods that are learned and then applied to problematic situations. They are derived from empirical observations and making sense of how people actually think, design and make sense of their worldly situations (Dewey, 2013/1910; Schön, 1992; Gallagher, 2017). These processes, which are also intersubjective—involving intercorporeality and interaffectivity (Fuchs, 2016)—constitute what Gallagher calls a *natural pedagogy* (Gallagher, 2017, p. 203). In other words, they are orientations and dispositions that we already naturally possess as living human beings, and constitute the natural creative living of life. So, perhaps it is not so much a question of learning how to resolve problems, as much as creating situations in which our natural problem-resolving can develop and flourish.

Design Thinking

Design thinking was discussed earlier in *Chapter 4*, in relation to the general approach to this inquiry, but I will now revisit it in relation to its use specifically as a design approach. To briefly recap, design thinking is a current popular approach, or methodology, used for resolving complex, messy human problems. In the programmes that I teach on, for example, design thinking provides the overarching paradigm for most of our design activities and practices—including UX design. Popularized by the Stanford d. school (Stanford University, n.d.) and the design company IDEO (IDEO, n.d.), it is promoted as a human-centered approach to designing products, services and environments etc. As such, it is concerned mainly with human problematic situations and designing ways to improve them. It is also promoted as an interdisciplinary approach that is able to bring together people from different backgrounds and perspectives to collaboratively resolve complex problems.

Purportedly based on how designers actually think and resolve problems in practice, design thinking is offered as a process that can be followed by both designers and non-designers to develop innovative solutions. In particular, it is promoted to businesses and business students as an approach that leads to innovation.

Although there are a number of different variations of design thinking, it commonly begins with empathizing with the potential users you are designing for. This is a way of gaining an understanding of the design challenge, and is subsequently used to define the problem to be solved. Once the problem has been defined, practitioners then ideate potential solutions. From this they create prototypes which are tested and iteratively improved. Even though it is often presented diagrammatically as a linear process, it is conceived primarily as an iterative process involving short cycles of rapid ideation, prototyping, testing and refining.

However, as already mentioned in *Chapter 4*, a number of problems have been identified with this particular formulation of design thinking, and the way it is applied in different contexts, which requires further discussion (Nussbaum, 2011; Kimbell, 2011, 2012). Nussbaum (2011) suggests that, although design thinking has been very successful in shifting the focus and understanding of design—from the products of design to the process of design—there are issues in relation to the way it has been appropriated by business. By using it as a process tool for business innovation "it was denuded of the mess, the conflict, failure, emotions, and looping circularity that is part and parcel of the creative process" (para. 6). As a way of moving beyond what he sees as the limitations of design thinking, Nussbaum (2011) proposes the nascent concept of *creative intelligence*, which he sees as being more than just thinking—"it is about learning by doing and learning how to do the new in an uncertain, ambiguous, complex space—our lives today" (para. 12). In other words, an integrated thinking and doing in complex and messy problem situations. In particular, for Nussbaum (2011), creative intelligence is the "ability to frame problems in new ways and to make original solutions" (para. 13). Importantly, creative intelligence is conceived as an intersubjective social intelligence "in which creativity emerges from group activity, not a psychological approach of development stages and individual genius" (para. 13).

For Kimbell (2011) there are three main issues with design thinking. Firstly, it is based on a dualistic split between thinking and doing, and between designers and their design situations—rather than viewing designing as an integrated, situated and

embodied thinking in practice. Secondly, it reduces complex and diverse design practices and contexts to a generalized formula. Thirdly, it privileges the designer as being the main agent in the design process (Kimbell, 2011, p. 289). In response, Kimbell (2012) draws on a combination of practice theory and the new materialism of Karen Barad (2007)—with her concepts of *agential intra-actions* and *material-discursive practices*—to move beyond the narrow and reduced accounts of design thinking. In this way, she is able to reformulate *design thinking* as a more integrated and holistic *design-as-practice* (Kimbell, 2012, p. 133). From this perspective, practices are "conceived as a nexus of minds, bodies, things, and their institutional arrangements within which designs and their users are constituted" (Reckwitz, as cited in Kimbell, 2012, p. 131). In a similar way, Dalsgaard (2014), draws on Deweyan pragmatism as a way of providing a more appropriate conceptual framing for both *design thinking* and *designerly ways of knowing* (Cross, 2006). For Dalsgaard, thinking and doing are seen as being integrated modes of transactional experience within design situations, rather than being separate activities. In this way, he reconnects *design thinking* with Cross's *designerly ways of knowing*, Dewey's theory of inquiry, Schön's reflective practice and Buchanan's (1992) notion of *wicked problems*.

For Cross (2006), *designerly ways of knowing* is an integrated knowing, thinking and doing that represents a separate inquiry paradigm—distinct from traditional academic science and arts inquiries. As designers usually work with ill-defined problems, rather than having definitive *right* solutions, they only have possible solutions, that *might* work. Consequently, the possible solutions need to be prototyped and tested in action to see how they perform. In contrast to traditional academic inquiries involving deductive and inductive reasoning, which are *problem-led*, for Cross the *designer* approach is instead *solution-led*—involving abductive or constructive reasoning. In response to the ill-defined nature of design problems, a solution, or solutions, are tentatively proposed as ways of thinking about and defining the problematic situation. It also highlights a particular issue with the formulaic *design thinking* process—with its emphasis on discovering and defining the problem, prior to ideating possible solutions. In contrast, in *designerly ways of knowing*, possible tentative solutions are arrived at, or suggested, more immediately through abductive reasoning. Cross (2006) also notes that designers use non-verbal codes—in the form of models, drawings, diagrams and sketches, etc.—to translate abstract requirements into tangible objects. They are able to use these codes to read and write in object languages—both as aids to think with and in communication with others.

Essentially, we can say that designerly ways of knowing rest on the manipulation of non-verbal codes in the material culture; these codes translate 'messages' either way between concrete objects and abstract requirements; they facilitate the constructive, solution-focused thinking of the designer, in the same way that other (e.g. verbal and numerical) codes facilitate analytic, problem-focused thinking; they are probably the most effective means of tackling the characteristically ill-defined problems of planning, designing and inventing new things. (Cross, 2006, p. 10)

In response to Cross's call for a new paradigm of designerly inquiry—distinct from traditional academic science and arts inquiry—and drawing on the pragmatist-orientated perspectives of Schön (1992) and Buchanan (1992), as well as Kimbell's (2012) notion of *design-in-practice*, Dalsgaard (2014) outlines what he sees as the convergence of Deweyan pragmatism and design practice—in particular, how Deweyan pragmatism is able to provide both the conceptual and practical basis for designerly inquiry. For Dalsgaard (2014), *designing* necessarily involves an intertwining of theory and practice, as well as thinking and doing. As such, design practice is experimental, interventionist and transformative, with solutions emerging from situated interaction. Dalsgaard (2014) draws on Dewey's notions of situated transactional experience and the transformative process of inquiry—as a way of reframing design thinking as *design practice*; involving integrated thinking, doing, theory and practice. Seen in terms of Dewey's theory of inquiry, design practice involves intervening in and transforming ill-defined problematic situations through the use of technology. "Technology frames our understanding of the situation and serves as a means for transforming it" (Dalsgaard, 2014, p. 149). For Dewey, however, *technology* has a broader meaning than just material instruments and tools—it also includes their *use*. In addition to material tools, it also includes *conceptual* instruments and tools, and their use.

Taking a practice-orientated pragmatist perspective on design practice has a number of pedagogical implications. I will just touch briefly on these here, and then discuss them further in the next section. Firstly, learning, as a transactive experiential and experimental process, generally supports project-based and problem-based approaches—involving integrated reflection and action, as characterized by Schönean *knowing-in-action* and *reflection-in-action*. Secondly, because designers often think and communicate via non-verbal visual and material codes, such as sketches, mockups and prototypes, their reflective practice is not always easily made verbally explicit. This has implications for academic writing requirements—such as proposals,

reflective statements, essays and production reports—and their effectiveness in formal design learning contexts. Thirdly, the ill-defined nature of design problems, and the solution-led approach to design practice, stand in contradiction to traditional academic practices. Academic inquiries usually begin with a research or discovery phase that is subsequently analyzed inductively and deductively in order to define the problem, prior to ideating possible solutions. In design practice, (re)solutions come to mind abductively as suggestions, or speculative propositions, and are used as a way of getting a handle on the problem (Cross, 2006). As such, the processes of developing, experimenting and refining tangible solutions *are* the research and discovery. For Schön (1992), this is expressed as the tension between rigor (what he also refers to as *technical rationalism*) and relevance. For me, in particular, this reinforces the need for more radically agile forms of learning—beyond traditional educational structures—that are able to align more with actual design practice and natural experimental pedagogy.

> I dwell on designing for two reasons. First of all, designing, in the narrower sense proper to the design professions, offers a vivid way of understanding what Dewey meant by *transactional* inquiry…Second, designing in its broader sense constitutes the core of practice in all professions, occupations, and everyday living…Hence an epistemology of practice must be an epistemology of *designing*. (Schön, 1992, p. 127)

A final criticism I have of *design thinking,* with its focus on business innovation, is how its human-centered orientation has been cynically appropriated by business for their own ends—at the expense of the *more-than-human* world (Abram, 2012). In particular, it is used as a way of making consumer products and services more desirable and addictive to humans. This narrow focus does not consider the wider impact on the longer-term sustainability of the living planet, that supports all life, including humans. Consequently, a reorientation is needed by design practice in order to address the wider wicked and interconnected planetary and sociocultural-economic crises the world is now facing. These include the climate crisis, loss of biodiversity, species extinction, soil degradation, plastic waste, fossil fuel emissions, industrial agriculture, resource depletion, water quality and access, overpopulation, inequality, cultural polarization, access to education, famine and war. In particular, following the calls by Naomi Klein (2019) and George Monbiot (2017), design practice(s) needs to be applied to designing new sustainable and equitable worlds, and ways of living. In relation to education, this involves taking a *systemic sustainability* approach (Davis, Sumara, & Luce-Kapler, 2015).

Open Attitudes and Orientations

In addition to a preference for creative problem solvers, employers also value employees who are self-motivated, have an open and flexible attitude, are enterprising, have a *can-do* attitude and are able to challenge others. Although these are expressed here as separate attributes that are somehow possessed by individual practitioners, they are all actually interconnected aspects of an open attitude and orientation. According to Peters and Roberts (2011):

> "Open people" are regarded as experimental, creative, curious, and less thrown by complexity and subtlety. They are contrasted with "closed personality," people who may be more conservative, less flexible, more bound by habit, resistant to change, and tied to the security of the familiar environment. (Peters & Roberts, 2011, p. 5)

Not surprisingly, in a domain that was founded on a culture of open source, open access and experimental hacker culture, having an open flexible orientation is not only highly valued, it is at the core of domain practice. The question, then, when learning to become a practitioner, is how does a person come to have an open attitude if they do not already have one? In my teaching experience, having an open attitude is also essential in agile learning approaches. Generally, students who do well tend to have an open attitude, even though having an open attitude does not necessarily mean they will do well. Other factors such as aptitude and prior understanding also influence learning. However, what I have found is that by having an open flexible learning culture and environment, as well as at least a few open people to start with, most students are able to become more open. So, along with problem resolving, design practice and team work, openness can also be learned through being enculturated within open learning and work situations.

From a Deweyan perspective, attitudes and orientations are not rigid personality attributes that strictly belong to the individual subject. Rather, they are body-mind habits that are able to be transformed (learned). As such, they are, at least partly, socioculturally determined, and can shift through participation and immersion in different sociocultural situations. There are, of course, other factors at play, such as affective states and the specific conditions of the situation—for example, if it is problematic or not, and if it is, how problematic. Furthermore, attitudes can never be completely open, nor is there necessarily a strict dichotomy between open and closed

attitudes. We might possibly be open towards some discriminated aspects of the situation, yet at the same time closed to others. In other words, attitudes are relational and situated.

Notwithstanding the complex dynamical interrelatedness of attitudes with all the other modes of experience, the attitude that is most relevant to this discussion is perhaps a general open orientation towards unfamiliar situations, others and learning new things. However, many students have become habitually closed off—due to being enculturated within previous learning, family, cultural and life situations. Therefore, an important part of agile learning is shifting students' attitudes and orientations, to reacquaint them with their natural openness. This might include play, experimentation and risk taking (without fear of failure), but also requires positive encouragement, support and nurturing. Ultimately, however, I suggest that openness is a fleeting phase in the experiential continuum, whereby we open to speculative possibilities in response to problematic situations, and then close again as knowing is restored. In other words, it is the process of mind opening and reorientating—as an integrated phase in the more general process of problem resolving. As such, it too is learned through practice.

Conclusion (Curriculum)

To conclude this discussion, then, what needs to be learned, in order to become a domain practitioner, is *integrated practice*. This includes not only the domain specific tools and technologies, but also conceptual frameworks, methodologies and methods. However, it is not just a matter of learning about these things, or how to use them. They need to be learned how to be used *in application*, as practical means for resolving messy design and development problems—within dynamically unfolding sociocultural-material practice situations. As these situations involve intersubjective transactions with other people, in the coordination of shared activities, an essential part of practice is effective communication. This involves being open to, and respectful of, others' perspectives and different ways of doing things. However, communication and thinking skills are not a separate order of *soft* skills, distinct from *hard* technical skills. Rather, they are all integrated aspects of whole practice. In a similar way, problem resolving is not strictly a mental activity that is separate from practice—it *is* practice. Or rather, practice is an entangled multiplicity of problem resolvings over multiple timescales. In other words, the walls between soft and hard

skills, thinking and doing, and open and closed orientations are all dissolved within the notion of integrated whole practice. This, however, does not mean that there are no walls at all—as learning moves out into the domain of practice, the walls become the boundaries of the domain which the practices constitute.

The curriculum, then—what is actually learned by the individual learners and the community of learners—emerges from the sociocultural-material practice situations in which they participate. Consequently, the learning outcomes cannot be predefined or known in advance. What is being learned is always in relation to the current context of the particular practice problems and projects being resolved. Furthermore, the learning-practice situations are always sociocultural and material/physical, involving other people, shared practices, tools and technologies. However, as all these things are in continual state of flux, practitioners are continually learning—both within unfolding situations, and in new and unfamiliar situations. As such, part of what is being learned are habits (including attitudes and orientations) of adaptation, adjustment and attunement to different situations—including new and emerging technologies and practices. In other words, learner-practitioners need to learn to unlearn and relearn. This, then, leads to the question of *how* they learn.

The Pedagogy: How it is Learned

Having concluded in the previous section that what needs to be learned is *integrated whole domain practices*, I will now discuss the implications for how these might be learned. To briefly recap, this notion of integrated practice is understood here as the entanglement of multiple problem-resolving processes over multiple timescales, that include multiple intertwined modes of transactional experience. These include transactions with domain-specific tools and technologies, transactions with conceptual objects of thought (thinking), and intersubjective transactions with other people (communication). Integrated practice also calls for attitudes of openness to new and unfamiliar situations, other people, new concepts and practices, and new tools and technologies. Domain practice, in its broader collective meaning, can also be understood as an integration of *all* domain practices—from general domain-wide practices, to the more specialized practices required for roles within specific practice situations. Framed as *problem resolving*, practice generally follows a Deweyan process of inquiry—as an integrated experimental process of thinking and doing.

However, these practices, as well as the particular workplace and project situations that they take place in, are not static, stable structures. Rather, they are dynamic and constantly undergoing change through the dynamical transactions between practitioners and their sociocultural-material environments—including other people. Consequently, practitioners not only need to be able to adapt to and cope with change, they also need to be active participating agents (albeit *weak* agents) of change. As such, it is not a matter of simply inducting and enculturating learners into stable domain practices and workplaces. Rather, learner-practitioners need to develop habits and attitudes for embracing, adapting to, and contributing to change– in themselves, their workplace-practice situations and the wider domain of practice.

I also suggested in the conclusion to the last section that learning, to become a practitioner, also needs to be approached in an integrated whole way—through participating in whole practice situations. Following my agile learning approach (Stevens, 2013), this might start with simple situations and then iterate through more complex situations—ultimately leading to simulated and actual workplace situations. For the purposes of this discussion, I will refer to this general approach as *learning through practice*. However, before I discuss specifically what this might entail, I will briefly recap (from *Part One*) how the terms *knowing*, *practice* and *learning* are understood from a pragmatist-enactivist perspective.

Knowing, Practice and Learning

From a pragmatist-enactivist perspective, the integrated body-mind organism (including the human organism) is always necessarily engaged in dynamical transaction with its environment, within a continuum of unfolding situations. The *situation* refers specifically to the organism and the environment taken together in transaction as an integrated whole. For Dewey, this transaction between the organism and its environment is what constitutes *experience.* As such, it is conceived as being both subjective and objective "in unanalyzed totality" (Dewey, 1929, p. 8). However, the organism is not merely engaged in a series of separate and unrelated episodic experiences. Rather, past experiences live on in present and future experiences through *habits*—in what Dewey (1938) calls the *experiential continuum* or *continuity of experience*. On the Deweyan view, habits are understood as predispositions to act, and, for human organisms, include both embodied habits and intellectual (mental) habits. However, rather than being fixed or rigid procedural routines, habits are

dynamic and able to undergo change in response to new and unfamiliar situations and experiences. Following Dewey, then, it is this notion of habits that forms the basis of my understanding of the terms *practice* and *practices*—as complex sets of integrated body-mind habits that are able to dynamically adapt and attune to different sociocultural-material situations. As complex sets of habits, practices are inherently sociocultural, historical and normative.

In common usage, however, used as a noun, there are two different meanings of the term practice, so it is important not to conflate the two. In addition to the meaning outlined in the previous paragraph, as a complex set of body-mind habits, the term practice can also refer to the actual enactment of the habitual predispositions within particular situations. The former sense refers to *a* practice as a complex set of habits, while the latter sense refers to being *in* practice as an activity. Being *in* practice is best understood in terms of integrated transactional experience. In other words, *a* practice can be understood as the predisposition of the body-mind for skillful action *in* practice. *In* practice, however, as transactional experience, also involves the sociocultural-material environment, and as such, is always situated. Practice *situations*, on this understanding, then, refer to the habituated and enculturated body-mind practitioner and their sociocultural-material environment taken together, in dynamical transaction.

However, this is still not the full story. Practice activity (being *in* practice) is never a case of simply applying fixed habitual routines within particular situations. Rather, as no situation is ever exactly the same, and the situations themselves are continually unfolding (or becoming), practice must always involve some form of ongoing body-mind adjustment, attunement or adaptation, of which we may or may not be consciously aware. In other words, practice activity cannot necessarily be considered as *knowing*—in the sense of being certain of the outcome. Rather it might be better conceived as the dynamic back and forth between not-knowing and knowing. In this way, knowing what to do, or how to respond, in a particular situation can never be fully anticipated in advance. Rather, knowing emerges *in* practice—as the dynamical transaction between the habituated body-mind and its sociocultural-material environment. This means that the enacted habits, or practices, of adjustment and reorientation—whether at the subpersonal level, or the level of conscious awareness (thinking)—also co-constitute *knowing*. In other words, knowing that we don't know—even if it is just a vague, background, felt sense—is a necessary condition for

transforming indeterminate situations into determinate situations. All practice, then, involves an integration of multiple simultaneous cycles (or feedback loops) of situated *not-knowing*, reorientation, and *knowing* over multiple timescales—both consciously and unconsciously.

> It means that knowing is literally something we do; that analysis is ultimately physical and active; that meanings in their logical quality are standpoints, attitudes and methods of behaving toward facts; and that active experimentation is essential to verifications. Put in another way it holds that thinking does not mean any transcendent states or acts [idealism] suddenly introduced into a previously natural scene, but that the operations of knowing are … natural responses of the organism, which constitute knowing in virtue of the situation of doubt in which they arise and in virtue of the uses of inquiry, reconstruction, and control to which they are put. (Dewey, as cited in Garrison, 2001, p. 278)

For both pragmatists and enactivists, *knowing* is not something *in* the mind of the subject and *of* external events. Rather, it is the transactional experience itself—the intelligent and skillful enacting and undergoing of the body-mind—within situations unfolding more or less as expected. As Schön (1992) puts it:

> Knowing-in-action is located not only in the actions but also in the objects in relation to which we act. It is through our commerce with familiar objects that we gain access to what we know…In order to gain access to such felt-path knowledge, I must put myself, actually or virtually, into the situations where the routine can be executed. Take me out of the situation and what do I know? (p. 124)

Learning, from a pragmatist-enactivist perspective, is also associated with the notion of habits, and can be understood primarily as the formation, reformation and transformation of habits. Specifically, learning occurs when existing habits do not work in particular situations. This disjuncture in the knowing flow of experience calls for adjustments and attunements to establish, or restore, the knowing relationship with the environment. Within the living present timescale, this might be thought of as an experimental process, in which momentary adjustments and attunements are made with little or no conscious thinking, to see if they work. Over longer narrative timescales, the process might involve a greater level of conscious reflection—along with tentative propositions, memory, imagination, reasoning and testing in action. This longer timescale learning process can be seen as generally aligning with Dewey's *theory of inquiry* or Engeström's *expansive learning cycle*, while the shorter form aligns more with Schön's notion of the *conversation with the situation,* involving *knowing-in-*

action and *reflection-in-action*. Learning over all timescales, however, can be considered to be *experimental*—as the outcome can never be fully known with certainty in advance, and must be tested in practice to see if it works.

However, although the outcome might not be known in advance, the tentative (speculative) proposition, and testing out, are not completely random either. Rather, they are based on prior experiences of what may or may not have worked in similar situations in the past. These are stored as organic body-mind habits that are both embodied and intellectual. As such, processes of learning—from subconscious cellular and neuronal processes (in the elementary timescale), through momentary adjustments and attunements (in the integrative timescale), to the more substantial processes of reorganization and reorientation of the habituated field of meanings (in the narrative timescale)—are also habits that are able to be transformed. In other words, learning itself is a habit, or practice, that is learned *through* the practice of learning. Furthermore, rather than there necessarily being three distinct types of learning—at the elementary, integrative and narrative timescales—they form an integrated continuum. For example, what is traditionally thought of as *higher* learning involves a complex dynamic integration of processes at the integrative and elementary timescales.

Learning Through Practice

Returning, then, to the notion of *learning through practice*—the word *practice*, in this context, refers to practice as *activity*, or dynamical transactional experience. However, practice might also refer here to the activity of *rehearsing* something in order to get better at it. To a certain extent, learning through practice follows the general Deweyan approaches of *learning by doing* and "education *through* occupations" (Garrison, 1995, p. 735). It also has similarities with Lave & Wenger's (1991) notion of *situated learning* involving *legitimate peripheral participation*. For Dewey (1917, as cited in Garrison, 1995, p. 736), "[t]he only adequate training *for* occupations is training *through* occupations." However, Garrison (1995) points out that Dewey, in a similar way to Lave & Wenger (1991), does not have in mind a narrow apprenticeship model—in which knowledge and practices are passed asymmetrically from master to apprentice. Rather, individual learning and knowing emerge from the intersubjective sociocultural-material work practices in which the learner-subject is engaged in. In other words, the complex set of body-mind habits of individual practitioners (i.e., their

practices) both emerge from, as well as co-constitute, the intersubjective domain practices—through their dynamical participation in work situations, and the wider domain of practice. In keeping with Dewey's view that individual minds are integrated functional parts of the sociocultural wholes, individual body-mind practices can also be understood as integrated functional parts of whole sociocultural workplace and domain practices. Garrison (1995, p. 736) quotes Dewey (1916):

(a) The advances which have been made in the psychology of learning in general . . . fall into line with the increased importance of industry in life. . . . It reveals that learning is not the work of something ready-made called mind, but that mind itself is an organization of original capacities into activities having significance. (p. 325)

(b) An occupation is a continuous activity having a purpose. Education *through* occupations consequently combines within itself more of the factors conductive to learning than any other method. (p. 319)

Garrison (1995) also notes the similarity between Dewey's notion of learning through occupations and the conclusions reached by Lave & Wenger (1991), in their study of apprenticeship.

[T]he notion of situated learning now appears to be a transitory concept, a bridge, between a view according to which cognitive processes (and thus learning) are primary and a view according to which social practice is the primary, generative phenomenon and learning is one of its characteristics. (Lave & Wenger, as cited in Garrison, 1996, p. 736)

Consequently, it might be said that the learning taking place within sociocultural workplace (practice) situations is not limited to the learning of the individuals within the situation, but also includes the situation itself—as the living context for mutual learning. "Interaction is what creates and vitalizes the integrity of the living world. Over time the ongoing survival of the organisms in their environment requires that there be learning, and learning to learn, together" (Bateson, 2015, p. 1). For Bateson (2015), and her notion of symmathesies, individual subjects and their multiple intersecting and interacting contexts mutually learn together in dynamic interrelationality.

From this perspective, and consistent with a pragmatist-enactivist perspective, I suggest that the noun and verb forms of symmathesy—as the learning context and the learning activity—collapse into each other. The living, learning entity is always in a process of interaction and becoming—acting on and being acted on by its multiple

contexts. This aligns with Dewey's view that all existence and all entities are events in the making (Dewey, 1929). Relating this back to the discussion about learning through practice, then, individual learners and their multiple learning contexts—including other learners, teachers and practitioners—can be understood as symmathesies. They are all in a continual process of making, remaking, adjusting, attuning, adapting, forming, reforming, transforming, reorganizing and reorientating. In short, *learning*. The next question, then, is: *what are the implications of this perspective for designing learning situations, as experiential continuums, for the specific purpose of becoming a domain practitioner*?

Learning Situations

As I have already touched on, the general pedagogical approach I am proposing here is *learning through practice* (as activity) for the purpose of becoming a domain practitioner. However, from a pragmatist-enactivist perspective, *becoming a practitioner* does not involve acquiring a fixed set of definable *work-ready '*attributes, skills and knowledge' through a prescribed course of learning activities—separate from work activities. Rather, it is understood as an emergent and continuous *becoming-a-more-experienced-practitioner* through practice. Conceived in this way, there is no *acquisition*, as such. Rather, it is a living dynamic process of transformation and adjustment of multi-layered complex sets of habits, within dynamic multi-layered practice situations. Furthermore, learning is not a process that happens exclusively within designated courses of learning (within or without institutions) and then subsequently applied in practice to work situations. Rather, it is a process that is ongoing within inherently unstable and dynamically unfolding workplaces. In turn, workplaces are situated within unstable, dynamically emergent domains of practice— all of which are situated within an unstable, dynamically changing and precarious world. Living human subjects do not exist as fixed entities or selves. Rather, they are dynamically changing events (or becomings)—entangled in multiple intertwined contexts, which are also events.

In the previous section, I discussed various aspects that emerged from my interviews, in relation to what was felt necessary to have, or to be, as web domain practitioners. However, rather than being separate, distinct things, I suggested that taken together, they constitute whole integrated practice(s). As such, they can be understood in terms of Dewey's theory of inquiry, involving integrated action and reflection, over different

timescales. From this perspective, the skillful use of domain tools and technologies—which includes computer use, coding languages, design and development software, etc.—can be understood in terms of Schön's (1992) metaphor of the *conversation* between the practitioner and their tools and materials—involving *knowing-in-action* and *reflection-in-action*. In this way, practice is never just a matter of applying routine, procedural, technical skills. Rather, it always involves, to some extent, some form of problem resolving. As such, all practices are in some way just different forms of problem resolving—but over different timescales and involving different types of problems. *Design thinking*, reformulated as *design practice,* might then be understood as the process of resolving more complex, ill-defined problematic situations—involving multiple contexts over multiple timescales.

As previously discussed, all practices are *sociocultural* practices—whether they are communication practices (involving intersubjective transactions with others), technical practices (involving transactions with sociocultural objects such as tools and technologies), or reflective practices (involving transactions with abstract sociocultural meanings and concepts). For Dewey and Mead, even thinking and talking to ourselves are sociocultural acts—as they involve transacting with, and the reorganization of, sociocultural meanings and the generalized other. "If we had not talked with others and they with us, we should never talk to and with ourselves" (Dewey, 1929, p. 170). For pragmatists, meanings, mind, language, tools, technologies, materials and even *selves* and agency, are all sociocultural products. In other words, everything is sociocultural. Even our experience of physical materiality, in its meaning for us, can be considered sociocultural (see also Barad, 1996). As such, the so-called *soft* social and communication skills, that are considered necessary to work with others in work situations, are not something in addition to the technical skills. Rather, they are an integrated part of practice, that are also learned through experience. Open attitudes and orientations are also sociocultural emergences. Practitioners immersed in open supportive workplaces become enculturated and infused with the same attitudes and orientations.

Ultimately, learning through practice needs to lead to actual workplace situations. However, this does not mean that novice learners can necessarily be thrown into the deep end and learn solely on the job, as suggested in "An Open Letter to the New Zealand Public" (2017). Learning needs to start somewhere, and in my teaching experience, that somewhere is concrete, practical making in its simplest form. This

means starting with simple, whole practices involving not only the use of basic foundational tools, technologies and coding languages, but also the related problem-solving approaches and foundational concepts with which connections and interrelations can be made. Even though learning activities at the early stages do not necessarily take place within actual workplace situations, it is still important to create an open, supportive and sharing socioculture—albeit in a simple and playful way—as a way of orientating and enculturating learners from the start.

From my interviews, I found that vocationally-orientated students placed a high value on hands-on work-related projects that they felt provided them with relevant experience for the workplace. Although they appreciated being able to choose their own projects and direction, they felt that they required more constraints and guidance, at least initially, in order to make projects more manageable and achievable. This initial guidance might be provided by the teacher, in the form of simulated real-world projects. But as students become more skillful and capable, they can move on to actual work-based projects. These might take the form of live briefs, collaborative projects, work placements and internships—involving external industry practitioners as mentors or collaborators. Most students felt that working with more experienced and skillful practitioners was a valuable learning experience. As well as industry practitioners, work-based projects might also involve more experienced peers and teachers. Learning situations might include project mentoring, pair programming and collaborative group projects.

Learning Together

In traditional learning approaches—within educational institutions and NZQF contexts—the emphasis is placed on the individual learner as a separate agential *mind-self*, whereby their learning is individually assessed and graded, independently from the learning contexts. In my teaching experience, this has the effect of shutting down experimentation, exploration and sharing. Rather than focusing on their projects, students tend to work to the grading criteria. However, workplaces do not operate like this. Rather, they involve groups of practitioners working collaboratively together towards a shared goal. In other words, there is a disconnect between the socioculture and orientation of traditional learning situations and workplace situations. Consequently, learning situations need to be approached right from the start in an open, exploratory, experimental and collaborative way that aligns more with

workplace cultures. In this way, the whole learning context, including the teacher, can be thought of as a symmathesy—as a living learning entity.

From a pragmatist-enactivist perspective, all experience in its immediate givenness is primarily affective. That is, it has an emotionally felt aesthetic quality. Even the experiences of thinking, reasoning and understanding have a felt aesthetic quality. In fact, we often describe our thinking in terms of *feelings* (Johnson, 2008). As such, the aesthetic quality of learning experiences, and the effect these have on our attitudes and feelings about what we are learning, need to be taken into consideration. If learning is approached in a purely individualized, competitive way, learners can feel isolated, disconnected and unsupported. On the other hand, if learning is approached in a collaborative and encouraging way, learners might feel more connected, supported and motivated. For Fuchs (2016), intersubjectivity has both intercorporeal and interaffective dimensions, and for Gallagher (2017), we adjust and attune ourselves within sociocultural situations to the emotional and bodily dispositions of others—both as individuals and as a group. This aligns with Dewey's theory of communication—whereby shared understandings emerge from participatory intersubjective, intercorporeal and interaffective transactions. In this way, learning is something that teachers, students and practitioners do together (Biesta, 2013).

> I have outlined a concept of primary or pre-reflective intersubjectivity which is based on embodied affectivity and interaffectivity. It conceives emotions not as inner mental states that have to be deciphered or inferred from external cues, but as expressive, dynamic forces which affect individuals through bodily resonance and connect them with one another in circular interactions. In face-to-face encounters, each partner's lived body reaches towards the other to form an overarching system through inter-bodily resonance and mutual incorporation. According to this concept, social understanding is primarily based on intercorporeality; it emerges from the interactive practice and coordination of embodied agents. We do not need to form internal models or representations of others in order to understand and communicate with them; as bodily subjects, we are always already involved in a shared affective and expressive space. (Fuchs, 2016, p. 205)

In my experience, the hardest part of learning new and unfamiliar things is getting started—especially when you don't have any previous direct experience, or prior understandings, as a frame of reference. In other words, you cannot learn by doing if you don't know what to do, or why you are doing it. In my original agile approach (Stevens, 2013), I followed Perkins' (2009) *learning by wholes* approach to the teaching and learning of complexity, by iterating through a series of progressively

more complex wholes. In relation to creating websites, for example, this might begin with a brief overview of what websites are and how they work—in a simplified, general way. Then I go straight into showing the students how to set up their file structure, introducing them to a code editor, creating a basic html page and then uploading it to a server. The pedagogical method generally follows the *worked example* approach—involving the teacher stepping through the process, and the students following along. Through this process, novices are introduced in a simple way to making a whole website—which includes an introduction to the domain languages, tools, technologies and socioculture.

Although the *worked example* might be generally thought of as a constructivist approach, whereby learners are somehow constructing their own knowledge through their active doing, this is misleading. On the pragmatist-enactivist view, the learners are in experiential transaction with the whole sociocultural-material environment. This includes not only the tools and materials, but also the teacher and other students—which, taken altogether, form the learning situation. Furthermore, the intersubjective communication between the teacher and the students, and between the students themselves, is both intercorporeal and interaffective. It involves not only language, but also gestures, attitudes and emotional orientations. In this way, the students' learning is not just restricted to resolving their *not-knowing* in relation to unfamiliar tools and technologies. It also involves making sense of the socioculture of both the class situation and the domain of practice—both consciously and subconsciously. In addition, the felt aesthetic quality of the students' experience is not only determined by the attitudes and affective orientations of the teacher and other students. It is also influenced by their prior understandings, attitudes and affective states—as well as the material-physical environment. These, in turn, feed back into the situation and affect the other participants.

From the perspective of the teacher—as there is no way of knowing exactly how each learning situation will unfold—they need to be open, sensitive and responsive to what is happening. An essential part of teaching practice involves adjustment and attunement to the students, both individually and as a group (Schön, 1992; Niessen et al., 2008). One of the major issues that I was responding to in my original agile approach was the wide variance amongst the students. Not only do they arrive with varying levels of prior skills, understanding and experience in a range of different areas, they also have varying aptitudes, abilities, motivations, work ethics and goals.

This made it very difficult, if not impossible, to teach the same prescribed curriculum within a fixed timeframe, to all the students. My response to this was for each student to have their own individualized curricula, which entailed having multiple curricula running at the same time. However, in practice, I found that although this was manageable for relatively small groups, it didn't scale up very well. There are also problems with the actual notion of *individualized*. Firstly, as I mentioned previously, by placing the focus on the individual learner, the essential sociocultural nature of learning and knowing is neglected. Secondly, it perpetuates an individualistic constructivist (and neoliberal) notion of strong individual agency—in determining what should be learned. Thirdly, it does not take into account that it is the work and domain practices themselves that provide the structure and content for what needs to be learned.

Consequently, I have since shifted my thinking away from purely individualized curricula. Rather than students working and learning primarily as individuals, I am now proposing that they work mainly in groups—but in two different ways. The first grouping is in relation to what is being learned (i.e., learning groups) and the second relates to collaboration on team projects. In relation to learning groups, these might start off at the foundational level as pairs—for example, buddy programming—and then develop further to include communities of practice, communities of learning and communities of inquiry—centered around common areas of interest or specialization. Examples could include UX design, UI design, front-end development, etc. In relation to project teams, the idea is that they are able to simulate and reflect work practices and situations—in which each member is able to focus on a particular role, or roles, of interest to them. Individual learners can potentially be involved in any number or type of groups at the same time. The group approach recognizes the sociocultural nature of work and domain practices, as well as the learning and knowing that emerges from them. Rather than developing individualized curricula for each student—for example, individual learning plans (ILPs)—what they learn emerges from their participation in the group activities. Group projects progress from simple simulated projects through to actual workplace projects. In other words, it is the sociocultural practices themselves that co-determine what is learned, rather than prescribed or individual curricula. Being part of groups also provides social support, encouragement and motivation for learning—which can be lacking when working individually. Importantly, students learn to work in groups not as something separate to practice, but as an integral part of practice.

In relation to the learning of foundational tools and technologies—by approaching this in a collaborative way, it can mitigate many issues. For me, the biggest issue is the variance in prior understanding and aptitudes within a cohort group. This often results in some students getting bored while others are left confused and overwhelmed. Even though I often require students to *preload* before in-class worked examples—for example, through taking online interactive tutorials—there are still some inherent problems. Although online tutorials, such as those on Codecademy (https://www.codecademy.com/), do allow students to work through new languages and concepts in their own time, they are generally done out of context. In addition, as students usually do the tutorials by themselves, there is no opportunity for help and feedback if they get stuck. This is a problem for novices, in particular, as they don't necessarily understand why or what it is that they are doing—prior to establishing the context of creating actual websites. Rather than working and learning individually, they might be better working and learning in pairs, following an agile development approach known as *pair programming*. Not only does this provide a social situation in which they support and encourage each other, they learn together through joint making and problem resolving. In this way, teaching and learning are distributed across the situation. Even online tutorials and teacher-led worked examples can conceivably be done in pairs. My feeling is, however, that for learners to get the most out of pair programming, and to relate to each other, they need to be at similar levels—in terms of their understanding, skills and aptitudes. In other words, they need to be operating within the same, or similar, *zone of proximal development* (Vygotsky, 1978)—understood in this context as the difference between what they can learn on their own and what they can learn with the help of a more experienced practitioner. However, there is also a case for pairing students operating at different levels, with the more experienced student being able to mentor the less experienced one.

From the discussion so far, then, the things discussed in the previous section—i.e., tools and technologies, problem resolving, design practice, communication and open attitudes—are not distinct things that are learned separately then put together in practice situations. Rather, they are all intertwined aspects of whole domain practice(s) that are learned *through* practice—in contrast to learning *for* practice. Learning *through* practice, then, involves not only learning the coding languages, tools, technologies and techniques directly involved in the technical making of websites and web apps. It also involves problem resolving approaches (e.g., UX

design and design practice), communication and social skills (for working in teams) as well as open attitudes and orientations. In other words, learning *through* practice is the process of being habituated and enculturated within domain and workplace sociocultures—starting with simple practices and then progressing through to more complex actual workplace practices, in a continuous and whole way.

As projects and practices become more complex, teams expand, and students are able to take on more specialized roles that relate to their particular area(s) of interest and aptitude(s). For example, roles might include: UX designer, UI designer, front-end developer, front-end programmer, back-end developer, project manager and digital producer. Depending on the nature, scope and complexity of the project, students might perform multiple roles, and multiple students might work collaboratively in the same role. However, in my teaching experience, one of the biggest issues with student teams is that they lack experience in both managing projects, and within their specialized role. In other words, as they are still learning, they don't yet know what is involved. This differs from workplace teams, which usually contain more experienced practitioners—and which are put together on the basis of the particular skills required for that project. In addition, there are usually established workplace project management practices, norms and hierarchies in place to structure the project and workflows. This triangulates with the collected student perspective that, for student groups to function well, they require leadership, clear direction and roles—with team members preferably having complementary skills.

One way of closing the gap between student group projects and workplace teams might be to introduce teachers and domain practitioners into the mix—to work alongside the students as more experienced practitioners. This involves more than just mentoring students from outside the team. Rather, it involves teachers and practitioners working together *with* the students as active, participating members of the group. An example of this in practice is the *learning by developing* approach (Taatila & Raij, 2012), developed and implemented at Laurea University of Applied Sciences in Finland. This involves students, teachers and the local community of employer businesses working collaboratively together on work-world related projects. Another example is the *Kauri Lounge* project (Mavunga et al., 2019)—a collaborative, live installation in which I was personally involved, with a group of interactive design students, at the Ellen Melville Centre in central Auckland (Auckland Council Te Kaunihera o Tāmaki Makaurau, n.d.-b).

Learning by Developing

Learning by Developing (LbD) (Taatila & Raij, 2012) was developed by Laurea University of Applied Science in Finland as a pragmatist approach to vocational education. It follows the Finnish government-mandated mission of universities of applied science (mentioned earlier) to "provide higher professional education based on the requirements of the working life and its development" (Polytechnics Act 2003/351, s4, as cited in Taatila & Raij, 2012, p. 831). The LbD action model was developed as a way of integrating "regional development, pedagogy and R&D-work into one frame of operations." It also integrates what they see as the different types of professional *knowledge*. These are identified as "knowledge in theories and models", "knowledge embedded in skills and abilities", "moral knowledge" and "experiential knowledge corresponding to the components of professional competence as i) knowing, ii) understanding, iii) doing, and iv) situational management" (Taatila & Raij, 2012, p. 836).

> The LbD action model centres on a development project that is genuinely rooted in the world of work, requiring collaboration between lecturers, students, workplace experts and end users. A project forms a learning environment, where progress is made through the identified stages and the outcome is learning in individuals, leading to personal professional growth, as well as learning in a community, and finally the production of new knowledge. (Raij, as cited in Taatila & Raij, 2012, p. 387)

Raij summarizes the seven main characteristics of learning by developing as:

1) The starting point is a genuine development project derived from working life. It can be problem-based, seeking to find a solution; or innovation based, seeking to find reform by overlapping different areas of competence.
2) Learning by developing is based on authentic partnerships between lecturers, students and experts from the sector.
3) It includes the components and knowledge types of professional competence.
4) The development project is seen as a learning environment that involves knowledge included in the workplace (knowledge in practice), knowledge acquired about it through research (knowledge of practice), and new knowledge produced for the workplace (knowledge for practice). These can also be presented as descriptive, explanatory and creative knowledge.
5) Learning by developing facilitates collaboration between different experts acting as researchers, developers and facilitators of tools.
6) It forms a platform for demonstrating the students' competence.

7) Learning by developing results in learning for individuals and the community, the generation of new knowledge, and innovations in the form of new products, productisation, operating models or working cultures.

(Raij, as cited in Taatila & Raij, 2012, p. 387)

As an ostensibly pragmatist approach, notwithstanding its constructivist leanings, LbD provides a useful model for an integrated whole *learning through practice* approach that has been implemented and tested in practice. Importantly, in line with our discussion, learning is not just confined to the individual students taking part in the group projects. It is more broadly distributed across the situation—with the students, teachers, expert practitioners, clients, practices and the whole situation undergoing and effecting transformation. Workplace practices are not considered to be fixed, rigid structures into which the students are inducted—rather, everyone involved in the projects is able to contribute through their participation to new understandings and practices. According to Taatila & Raij (2012), teachers experienced in LbD practices have found the defining characteristics to be: "authenticity, partnership, trust, creativity and an investigative approach" (Taatila & Raij, 2012, p. 837).

> Authenticity arises from the genuine workplace projects that form the learning environment. Partnership is built on trust and on a commitment-inspiring agreement. All partners participate as equals, sharing experiences and finding meanings in order to produce new knowledge in their varying roles and responsibilities. There is room for every partner's creativity, which also leaves room for professional growth. The production of new knowledge and the development of competence become evident as the work progresses. (Taatila & Raij, 2012, p. 837)

Finally, with its focus on preparing students for *working life*, the LbD approach broadens the purpose(s) of vocational education to include all the participants involved in (and beneficiaries of) working life—rather than just acquiring *work-ready* skills. Participants and beneficiaries not only include students (as individual potential working lives) but also workplaces (as sociocultural and economic working-life situations), as well as employees (as individual practitioner working lives). The notion of *working life* also connotes a longitudinal dimension that extends over a person's entire life in work, rather than simply being *work ready* at an arbitrary point in time. For the LbD approach, and for Finnish universities of applied science generally, the outcome of vocational learning is not work readiness, as such. Rather, it is readiness for working life—as a continual unfolding longitudinal event, and everything that entails.

The Kauri Lounge Project

The *Kauri Lounge* project was a live collaborative project that I was personally involved in with a group of interactive design students for Conservation Week in 2018 (Department of Conservation, n.d.). The initial brief was to create a kauri forest experience at the Ellen Melville Centre (Auckland Council Te Kaunihera o Tāmaki Makaurau, n.d.-b) in downtown Auckland, to raise public awareness for *kauri dieback disease* (Keep Kauri Standing, n.d.). Kauri dieback is threatening the New Zealand native kauri tree with extinction. The Ellen Melville Centre is an Auckland Council venue which includes an urban lounge area that is open to the public, and where the forest experience was created. In addition to the Ellen Melville Centre—who were the primary client—other collaboration partners included Auckland Council Biosecurity, Conservation Week, our school's Kaitakawaenga (Māori cultural advisor), Auckland City Parks, the Auckland Council Activations Team, The Kauri Project (a collaboration of artists, environmental activists and iwi) and the Auckland Council Printroom. The core project team consisted of six second-year interactive design students and myself (their teacher). We also received help and advice from a number of my teaching colleagues at various stages of the project. The project was also entered in the 2019 Best Design Awards—run by the Designers Institute of New Zealand—where it won a silver award in the Student Ngā Aho category (Mavunga et al., 2019).

Following design thinking/practice, UX design and lean agile development approaches, we worked closely together with the Ellen Melville Centre, our Kaitakawaenga, and the other collaboration partners in weekly design sprints. These involved rapid prototyping, testing and regular weekly meetings—in which the prototypes and concepts were presented and discussed. The overall concept was to create an immersive, interactive multi-sensory forest experience that could tell the story of kauri—from its cosmological beginnings and significance for Māori, through its mass destruction for timber, leading to its conservation and regeneration, and to the new threat of kauri dieback disease. Although the whole group was involved in the overall design and direction of the installation, the students worked in smaller teams on the individual elements. These included the projection-mapping of forest images onto a wooden-slat wall, printed floor-to-ceiling banners telling the kauri story, kauri tree models, live native plants, ambient interactive birdsong, a virtual reality experience of the Waipoua Kauri Forest and a touch-screen information kiosk.

The students also created a visual identity for promoting the project. The name *Kauri Lounge* was chosen to retain the existing urban lounge feel, but with a kauri forest flavour. The logo design included koru elements to reflect the importance of Kauri to Māori and give the lounge a distinctive Aotearoa New Zealand feel. Bold, bright floor to ceiling banners were created for the front window displays that incorporated patterns of forest colours overlaid on native forest birds. They also included a whakataukī: "Nau mai ki te ihi o ngā kauri o te waonui a Tāne" to invite people into the forest. A series of posters and flyers were also created for a street promotion campaign. During the week of the installation (Conservation Week), lunchtime talks were given by leading scientists, artists and environmentalists—and two of the students were interviewed for Māori Television news.

Influenced partly by the *learning by developing* approach, and partly out of necessity, I took on the role of project manager for this project. Initially I had thought that one of the students might have been able to manage the project. However, because of their practical inexperience in working on live projects—especially with managing and coordinating multiple external relationships—I felt that I needed to be more actively involved. One of my colleagues, a former advertising agency creative director, also worked with the students on the design and production of the branding and print collateral. As project manager, I also coordinated advice and assistance from some of my other colleagues who had expertise in virtual reality, projection mapping, motion design and installations. In relation to the external relationships, in addition to working closely with the Ellen Melville Centre and Auckland Council Biosecurity, we also worked with AIMS Services (formerly Auckland Council Parks), who provided the live native plants, The Kauri Project (The Kauri Project, n.d.) (a group of environmental activists, artists and iwi dedicated to saving kauri), a traditional Māori wind instrument musician, the Auckland Council Design Office (responsible for city activations and who contributed towards projection equipment), Auckland Council Communications (who assisted with publicity and promotions), the Auckland Council Printroom (who took care of all the printing), and an audio-visual company (that provided the projectors and projection mapping software). As part of the team, we also recruited another, more mature student from another cohort, who had previous experience installing exhibitions at the Auckland Museum.

Through their involvement in this project, students were exposed to much more than they would normally encounter in their student-only projects. They experienced the

design and production of an entire actual installation—in all its messy complexity and practical constraints—involving multiple people, groups, organizations, clients and financial considerations. As such, it provided an extended learning situation in which we all learned together about the multiple intertwined strands that somehow all came together in the final installation. We learned about kauri dieback, the tragic history of kauri, the significance of kauri, environmental activism, traditional Māori music, virtual reality, interactive programming, projection mapping, native plants, large-scale printing, budgeting, PR, sound production, touch-screen kiosks and practical hands-on installation. It was an emergent learning journey for everyone involved. In particular, the students felt that they had been involved in a real work-world learning situation—involving a studio manager (me) and a creative director (my colleague). In one of the student's words (from their final reflection):

> What started out as a quest to help our client, The Ellen Melville Centre, to create a kauri forest with some loose leaves, turned into an attempt to save our/New Zealand's kauri trees… Creating an imaginative, immersive and relaxing kauri lounge in the heart of Auckland CBD… has been something I could not have imagined, it exceeded my expectations… In hindsight, the project was helpful in giving me some perspective on how a small sized agency would work. Being a team of 6 students, 1 lecturer and 1 course leader was like having 6 interdisciplinary-interactive designers, 1 team leader and 1 creative director. At least that's how I see it… We were encouraged to take a holistic methodology to how we collaborated as a team, making group decisions, having client meetings where we are all involved… collectively contributing to different parts of the design experience.

The Kauri Lounge project was an important learning experience for me personally—in relation to running live, collaborative learning projects. As such, it can be considered as a form of prototype, or change laboratory. In particular, it provided me with useful insights into how these types of *learning by developing* collaborations play out in practice, and how they might be improved on in future. From my perspective, there were a number of issues. Firstly, the composition of the team is critical and requires a balancing of the necessary skills and experience to cover the various roles and aspects required. For this project, all of the core group of six students were interactive design students, which meant we didn't have the necessary motion and graphic design expertise within the team. This was partly offset by bringing in another student, who was a good illustrator, and by having my colleague, who was a former creative director, to oversee the branding and printed elements. For future projects, I think it

would work better to approach this in a similar way to how work teams are put together, based on the required skill areas.

The second problem also relates to the composition of the team and involves the variances in student engagement and motivation levels, which, I should add, is a general issue for a lot of student group projects. In student group work, in learning only situations, I have found that this can be mitigated to a certain extent by students organizing their own teams. However, for live public installations like the Kauri Lounge project, all the team members need to have a similar level of engagement and professionalism—in order to get the project finished on time, and to a professional level. Again, this needs to be taken into consideration when collating the team. This, however, potentially creates another problem. From our earlier discussion in relation to work integrated learning (WIL), it was noted that employers tend to only want the so-called higher-performing students. The problem then becomes what to do with the other students—especially if our aim is to be participatory and inclusive. In other words, how do we create work-world collaborative projects that all students can potentially participate in? I suggested earlier in this section, in relation to shifting attitudes, that as attitudes and orientations (including motivation and engagement) do not strictly belong to the individual learner-agent—but are rather distributed across the sociocultural context—students might be influenced by the group attitudes. However, students do not just belong to project teams, they are members of all sorts of groupings and cultures and have their own unique histories, habits, enculturations and life situations that they bring with them to the project.

The third problem, and one that I have already discussed in a general way, is the *expectations gap*. However, there wasn't just a gap between myself (the teacher) and the client, but also between multiple people and groups—including between the students themselves, and between different people within the council. For the most part, navigating these differences fell on me, as the project manager. However, I did try where possible to involve the students in most of the meetings and discussions, as part of their learning experience. The biggest gap, however, and one that is a general issue in most live-brief situations, is between the school's expectations and the client's expectations. Having said that, although this can cause tensions during the unfolding of the project, it is not without learning value. My feeling is that through experiencing tensions with clients and other collaboration partners, students do actually learn something about navigating and resolving problematic intersubjective

situations. Although it is possible to mitigate some of these issues through open dialogue prior to starting the projects, it can never fully be known in advance how a particular project will unfold. The reality is that tensions and conflicts invariably arise and need to be dealt with. However, rather than regarding this necessarily as a problem, it be seen *as* learning—not only for the participants, but also for the whole project situation. So, perhaps the most important thing I learned, then, from this project, is to just let it unfold, and not try to control all the variables. Where it ends up is just where it ends up. And where it ended up can be seen in the images below, which were submitted as part of the entry in the Best Design Awards.

Figure 13. Front exterior of the Kauri Lounge installation at the Ellen Melville Centre.

Figure 14. Kauri Lounge student being interviewed for Māori Television news.

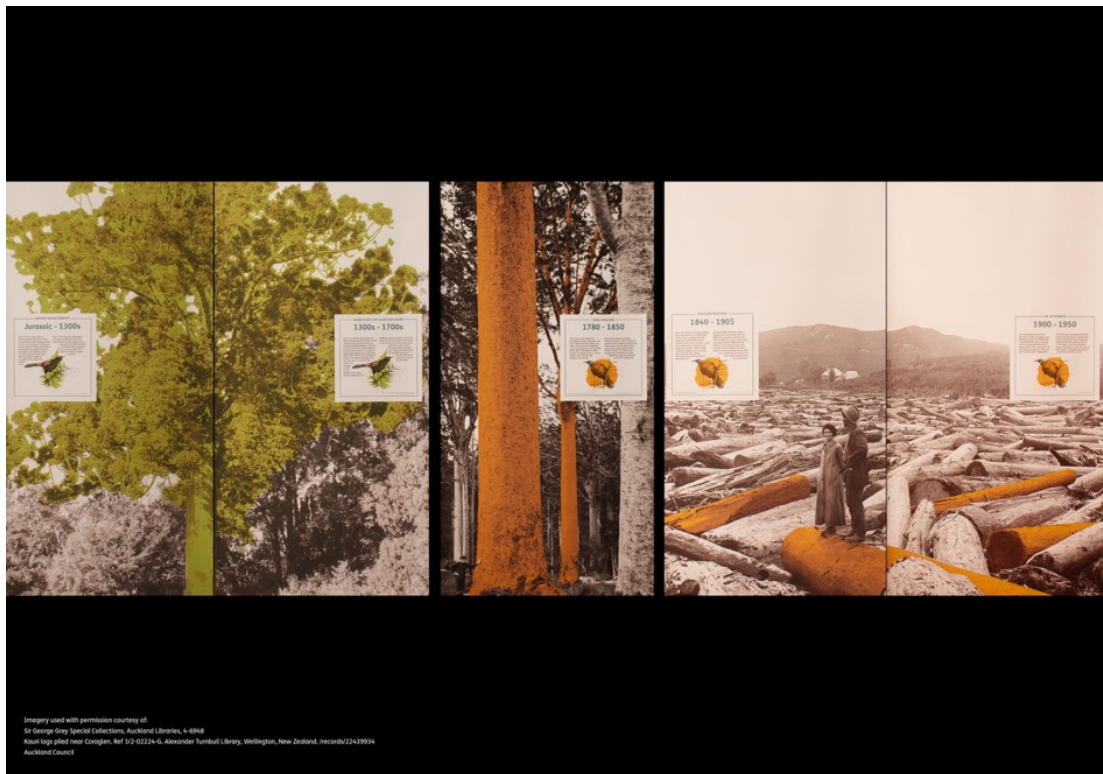*Figure 15.* Kauri Lounge prototypes and concept drawings.

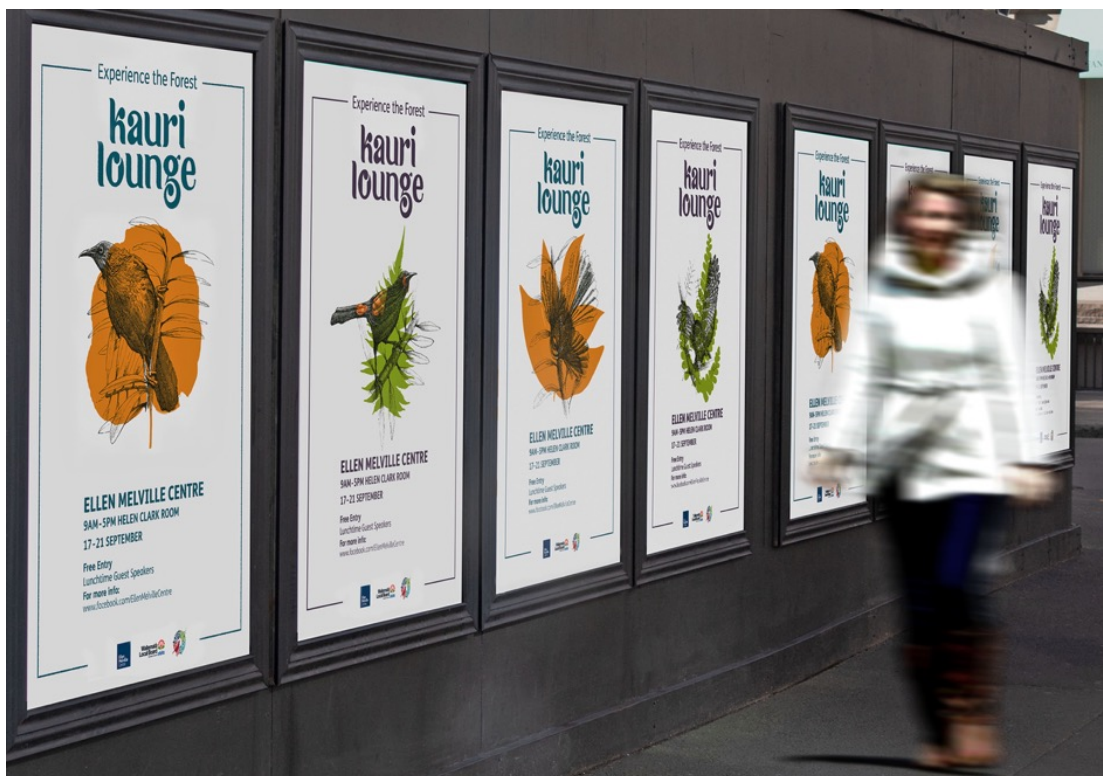*Figure 16.* Kauri Lounge interior wall banners telling the story of Kauri.

Figure 17. Kauri Lounge street poster campaign.

Internships

Another way of learning through practice is for students to undertake work placements, internships and part-time work, as part of their course learning. In my teaching experience, I have sometimes brokered and negotiated these directly with employers—while at other times the students themselves have actively sought and found their own positions. Generally, those who undertook internships and part-time work found it a valuable learning experience—especially in relation to experiencing workplace cultures, environments and practices. Not only were they able to apply things they had learned on the course to their work, they were also able to apply things learned in the workplace to their course projects. In some cases, their work projects *were* their course projects. Some internships led directly to job offers within the same company, and some of those working part-time moved to fulltime positions at the end of the course. Most of the students interviewed found that there was a difference between the course expectations and workplace expectations. On the agile GDCT course, they were encouraged to pursue their own direction and projects in a self-directed way—with emergent, and sometimes experimental, outcomes. However, in workplace situations they were generally given specific tasks to complete within a particular timeframe—often without any formal supervision or mentoring.

Internships—whether full-time or part-time, paid or non-paid, during the course or after completion—again raise questions about what is actually meant by being *work ready.* Rather than being considered fully work or fully learning, internships, in a similar way to learning by developing, can be thought of as a form of *transitory* learning— through actual workplace practice. During this transitory phase, the student-graduate might be said to be in a process of *becoming* work ready—in the sense of becoming a productive professional practitioner. This supports my previous suggestion that rather than expecting students to be *work ready*, as such, before they are able to participate in workplaces, they might instead be considered to be *internship*, or *graduate-programme,* ready. In this way, internships might be better conceived as *zones of proximal development*—in which they develop into professional practitioners under the guidance, or mentorship, of more experienced practitioners. However, their development into professional practitioners within a particular workplace does not mean that they are *work ready* in a generalized way. Rather, they only become ready for work in that particular workplace. The internship may well lead to a permanent paid

position within the same workplace, but if not, the student-intern may not necessarily be ready for work in other workplaces and require further workplace learning.

Conclusion (Pedagogy)

To conclude, then, I am proposing that the main pedagogical approach to becoming a practitioner needs to be *learning through practice.* This extends the Deweyan notions of *learning by doing* and *learning through occupations*. However, I made a distinction between an individual learner's *practices*—as complex sets of body-mind habits, and *practice* as an activity—as the skillful body-mind enactment of the practice habits within particular practice situations. Practice situations, then, refer to the habituated body-mind practitioner(s) in dynamical transaction (or Schönean conversation) with their sociocultural-material environments—including intersubjective transactions (communication) with other people. Broader domain practices, then, can be seen as intersubjective emergences that dynamically form and reform through the ongoing transactions between practitioners—within complex multi-layered practice situations. Following Nora Bateson (2015), workplaces, and other practice situations, can be characterized as *symmathesies*—as living learning contexts. In this way, it is not just the individual learners, teachers and practitioners who learn—the whole practice situation, and the broader domain of practice, can also be thought of as *learning*. In the previous section it was shown that practice, as an activity, is not something separate from thinking or theorizing. Rather it is a deeply integrated entanglement of doing, thinking, communication, emotions and attitudes—all working together in multiple processes of problem resolving over different timescales.

The implication for learning, then, is that domain practices are not stable structures into which novices can be inducted. Rather, *learning through practice* is conceived as an integrated whole approach in which learners learn through participating in whole integrated practice within dynamically unfolding practice situations. This includes technical tool use, domain languages, conceptual framings, problem resolving, social skills and attitudes. However, because of the dynamically changing nature of practices and practice situations, practices of adapting, adjusting and attuning (as forms of learning) also need to be learned *through* practice. As practice situations are fundamentally sociocultural, learning is also fundamentally sociocultural—it is something that learners, teachers and practitioners do together. Within learning situations—understood this way, as whole practice situations—the walls between

learners, teachers and practitioners dissolve into the living learning context, or *symmathesy*. From a pragmatist perspective, the sociocultural nature of learning situations also dissolves the walls between what Dewey saw as the competing educational approaches of *formation from within* and *development from without* (Dewey, 1938).

In relation to the learning situations themselves, then, novice learners cannot necessarily just be thrown in the deep end—into actual workplace situations. Rather, they need to progress iteratively from simple, whole practice situations through to more complex whole situations. As such, novice learners might start off in simulated studio practice situations—in which they are initially introduced to foundational domain tools, technologies, languages, concepts and practices. As they become more capable, they are then able to move out into the wider domain of practice, where they can work with domain practitioners and teachers on collaborative work-world projects. Examples of this might include the Finnish approach, *learning by developing*, and the collaborative project that I personally participated in, *The Kauri Lounge*. This then leads to participating in actual workplace practice situations—possibly in the form of work placements, internships and graduate programmes—and then on to actual work, in whatever form that might take. Importantly, there are no hard boundaries between learning situations and work situations. They are both dissolved into *domain of practice* situations in which everyone—novices, teachers and practitioners—are seen as *practitioner-learners*. This, then, now leads to the next section, in which I discuss the living learning contexts themselves. In particular, I look at how these might operate in a nomadic way across the boundaries of formal learning contexts and workplaces—within the transaction space of the domain of practice.

Learning Contexts: When and Where

Based on the notion of *learning through practice* discussed in the previous section, I will now look at the implications for learning contexts—in particular, how these might form an experiential continuum for learners moving from novices to professional practitioners. Based on Dewey's notion of experience as the dynamical transaction between subject and world, both the individual habituated and encultured body-mind learner, and their sociocultural-material learning environments need to be considered together—as integrated whole learning-practice situations. However,

following Bateson (2015), learning experiences are not only situated, the situations themselves are also learning—in a type of dynamical feedback loop. As such, learning is not something that can be isolated from our continuous lived experience—learning is synonymous with living (Garrison, Hickman & Ikeda, 2012). In the same way, learning situations cannot be regarded as being separate from general life situations—all life situations are learning situations.

Within our living experiential continuum, however, we purposefully engage in a variety of different activities and practices that have specific meaning for us—within particular situations and contexts. Furthermore, from a pragmatist perspective, the meaning and purposefulness of our activities are in their consequences. Work practices, in terms of their broader meaning and purpose, might be considered as a means for practitioners to make their way in the particular sociocultural-economic world that they find themselves living in. That is not to say, however, that the existent sociocultural-economic system is necessarily desirable or stable—or should not be subject to ongoing critique and change. Rather, it is merely a recognition that the sociocultural-economic system forms part of the conditions of the current problematic situation—albeit as an eventual existence that is in continual transformation. Although the current sociocultural-economic-environmental world provides the overarching context in which particular work practices and domains of practice are situated, for the purposes of this discussion, I will focus mainly on the learning situations leading to *becoming a practitioner* within the *web* domain of practice.

To briefly recap, then, my general proposition is that agile learning approaches—within creative technology domains—are necessarily constrained by educational institutions and qualification framework structures and practices. However, rather than attempting to transform existing educational institutions and qualification frameworks (although this might emerge as a possible outcome), I am exploring the possibilities and opportunities for nomadic agile forms of learning, outside these constraints. As such, any nomadic agile course of learning, as an experiential learning continuum from novice to professional practitioner, could potentially operate independently of existing institutions and qualification frameworks, and/or across their boundaries. However, regardless of the overarching organizational and funding contexts for implementing a nomadic agile course in practice, the pedagogical approach remains the same and still needs to move beyond these constraints.

In my original agile learning approach (Stevens, 2013), I proposed that agile learning does not necessarily advocate a particular pedagogical approach—apart from, perhaps, *learning through doing*. Rather, I proposed a flexible pedagogical approach that responds to the particular experience, knowledge, skills, aptitudes, attitudes, maturity and motivation of individual learners. However, as ostensibly a constructivist approach, the agile learning approach (as it was) placed too great an emphasis on the learner as an autonomous knowledge-constructing agent. As such, it did not fully consider the situated, sociocultural nature of knowing and learning. Subsequently, in my tentative *nomadic* (re)conception of the agile approach (*see Chapter 5*), I envisaged both the individual learner and the learning course as being nomadic. But again, I did not fully consider the sociocultural nature of the particular learning situations that the nomadic learner (and the course) were part of, and co-constituted. My tentative proposition focused more on the physical locations in which nomadic learning might take place. These included shared studio spaces, professional workplaces, public spaces (such as cafés, libraries, makerspaces, urban lounges and public transport), private spaces (such as offices and homes) and locations distributed across existing institutional spaces. Although this solves certain problems—in relation to utilizing physical spaces in a more efficient way and reducing costs—it does not sufficiently consider the sociocultural dimensions of learning situations. It also does not sufficiently take into account the experiential and situational continuity of domain learning, as habituation and enculturation.

In response to my tentative nomadic agile proposition, one of my former students made the point that continually moving around to different places might be disruptive and cause unnecessary stress and anxiety for students. They felt that having a consistent place to go each day, with the same group, provided not only a sense of place, but also a sense of belonging—to both the social group of learners and the institution. Through my exploration of pragmatism, enactivism and activity theory, I have subsequently come to see learning as a fundamentally sociocultural activity— both in relation to its broader cultural situatedness, as well as the intersubjective social interaction within a community of learners. In other words, learning is something we do together.

> In developmental terms, we need to consider the pervasive interaction with others. Our worldly knowledge, and our ability to think, are gained in very basic, intersubjective interactions—seeing things as others see them, imitating, doing what others do, valuing what others value—in processes that involve embodied

rationality, natural pedagogy, social norms, situated reflection, etc. (Gallagher, 2017, p. 203)

Even working and learning on our own is a sociocultural activity—as we are in transaction with sociocultural artifacts that derive their meaning (for us) from our intersubjective encounters with others. "Our perception of objects is shaped not simply by bodily pragmatic or enactive possibilities, but also by a certain intersubjective saliency that derives from the behaviour and emotional attitude of others towards such objects" (Gallagher, 2017, p. 203). For Dewey, even talking to ourselves is seen as a social encounter with the generalized other. "If we had not talked with others and they with us, we should never talk to and with ourselves" (Dewey, 1929, p. 170). Consequently, I have come to the view that it is the sociocultural environment that is primary and the physical environment that is secondary. Of course, all physical-material spaces are also sociocultural, in the sense that their meaning is in their use and roles within sociocultural communities. As such, there are still benefits to breaking learning courses out of physical institutional spaces and taking them to community spaces in which learners might feel more comfortable, supported and at home. Importantly, physical spaces in their various aspects (location, configuration and continuity) need to serve the sociocultural needs of the community of learners, as well as the wider sociocultural contexts they are part of.

What I am now proposing is a more integrated holistic approach that takes into consideration the sociocultural dimensions of learning, the individual learner requirements, authentic domain practice situations and the practical considerations of physical locations—such as economics and travel. Within this, however, there also needs be a certain amount of flexibility, to allow for individual life situations—including working individually at home or other remote locations. From this perspective, the defining characteristic of a learning course is not the curriculum, a particular qualification or a physical location. Rather, it is the sociocultural community of learners. As a community of learners, the nomadic agile course is not a fixed preestablished entity. Rather, it can be seen as a dynamic, intersubjective emergence that emerges from the learning activities and communication—both within the group and across the broader group of participants (teachers, practitioners and workplaces, etc.). In other words, the nomadic agile course is a symmathesy.

Taking a pragmatist-enactivist perspective, the nomadic agile approach places a strong emphasis on embodied (intercorporeal and interaffective) communication. As

such this requires a physical location, or locations, in which the community of learners meet and undertake shared activities. However, this does not necessarily need to be within an educational institution, as such, but could take place across different institutions, community spaces and workplaces. It also does not preclude learners working individually on projects and other learning activities, or communicating with each other remotely through connecting technologies. Furthermore, the community of learners does not necessarily need to be a fixed cohort of people who move through the course together within a fixed timeframe from start to finish. As individual learners have different prior understandings and skills—as well as different aptitudes, orientations and life situations—they could possibly start at different stages and progress through the course over varying timeframes. They may also drop in and out of the course, depending on their life situations and circumstances. As such, the community of learners dynamically reconfigures itself as people come and go.

In taking a general *learning through practice* pedagogical approach, the overarching learning context is the domain of practice itself. However, within the domain of practice, three main contexts can be identified that equate loosely to the phases that the learners might transition through, on their way to becoming professional domain practitioners. The first is the novice phase, in which learners are introduced to the domain and become familiar with the foundational languages and practices. This would primarily take place in simplified, simulated domain practice situations. The second phase might be considered more of a transitional phase, that might involve working collaboratively with more experienced practitioners. This might be done through a combination of simulated and work-world projects—across simulated and actual workplace situations. The final phase involves working and learning within actual workplace situations.

In relation to the first phase—the learning of foundational domain tools, technologies, languages and practices—I am proposing that this takes place across a combination of *simulated* workplace studio situations and remote locations. Studio spaces can be configured to also allow for worked-example demonstrations, short lectures and workshops. In a similar way to actual workplaces, the studio spaces might also include breakout spaces for meetings, presentations and socializing. These studio spaces would provide a physical anchor, or *home base*, for the course. Suitable spaces might include community spaces, such as libraries or council venues—for example, The Ellen Melville Centre—shared workspaces such as Generator

(Generator, n.d.), existing institutional spaces or purposeful dedicated spaces. The important thing is that they are reasonably consistent for each course cohort group— even though particular course cohorts could be based in different locations. In addition to the course home space, learners can still work remotely, either individually or collaboratively, and communicate through connecting technologies and tools. However, they would always have a consistent place to base themselves and fall back on, as well as be part of a community of learners. During this phase, the course can be characterized as nomadic, by virtue of it potentially operating over a variety of locations and involving a variety of different people or organizations.

However, as learners move into the transitional phase, they become increasingly nomadic, as they potentially move around different physical, project and group contexts. During this phase, learners are able to venture further out into the domain of practice—becoming more integrally involved with experienced domain practitioners, work-world projects and workplaces. Learning contexts can include collaborative work-world, or simulated, projects and short work placements that involve learners, teachers and practitioners working together over a variety of physical locations. These might be the home studio space or remote workplaces—but could also potentially include shared spaces, public and community spaces, private homes and institutional spaces. They could also potentially involve working across multiple course studio spaces in different locations—involving students on other courses running at the same time. An example of how this might work is a project that two of my graduate diploma students worked on 2014, in collaboration with three students from Unitec Institute of Technology (https://www.unitec.ac.nz/). The project involved creating an interactive installation as part of a World War One centenary exhibition at the Waitakere Library. During the project, they worked over a number of locations, including Media Design School, Unitec, Auckland and Waitakere Libraries and their homes. In addition to the students, the project also involved myself (their teacher), a Unitec lecturer, and library staff from Auckland and Waitakere Libraries—with the whole class being invited to the exhibition opening.

Figure 18. Help Me Tell My Story - a collaborative cross-institution student project.

In the final phase of learning to become a domain practitioner, students would work mainly in actual workplace practice situations on work-world projects. This might take the form of work placements, internships and graduate programmes—with students working in actual work teams and mentored by more experienced practitioners. Not only would they learn through participating in actual workplace practices, they would at the same time be learning about workplace cultures and orientations—as well as learning about working life in general. Depending on the individual learners and the participating workplaces, students could possibly work over a variety of different workplaces during this phase. There might also be the possibility of transitioning to more permanent employment within the same workplace.

Even though I have divided the learning journey—from novice to practitioner—into three distinct phases, this is just conceptual. In practice, they would form a continuum. Learning as a novice begins within a more defined, simplified and controlled context, and then expands outwards into the domain of practice and into actual workplace contexts, in a continuous movement. However, this does not mean that it is necessarily a one-way, linear process. Learners could possibly move backwards, forwards, sideways, vertically and horizontally through different phases and contexts—as their individual learning paths cannot be determined in advance.

Through experiencing different learning and workplace situations, learners are exposed to different potential practitioner roles, which may result in their goals and interests being reevaluated and their learning path altered. During the entire continuum of leaning phases, however, the home studio space is always available for the students to return to—and where the teachers are available to offer advice and guidance.

Although the initial foundational phase does not necessarily require a great deal of professional practitioner and workplace involvement, the second and third phases require progressively more participation by industry employers and employees. As such, the course expands from the initial, smaller community of learners and teachers to a broader community of workplaces, employers, practitioners, teachers and learners. This broader community is involved in multiple coordinated learning situations, that require organizing and facilitating. Although the facilitation and coordination might be undertaken by the teacher, or the course administration, it also requires a commitment of resources, time and money from participating employers and practitioners. It also possibly requires an alignment of epistemological understandings and pedagogical expectations—between teachers, practitioners, workplaces and learners. However, given the *expectations gap* (discussed earlier) identified by Pilgrim & Koppi (2012), between existing learning and work activities, this presents a potential problem for the nomadic agile course. *How do we get employer businesses on board and committed to participating in the teaching and learning of new practitioners?*

I suggest that the answer to this lies partly in the *demand* from industry employers for a steady supply of work-ready graduates. On the one hand, they expect educational institutions to provide them with work-ready graduates. Yet, on the other hand, they acknowledge the importance on *on-the-job* learning—as expressed in "An Open Letter to the New Zealand Public" (n.d.). The agile nomadic course—operating beyond the constraints of traditional institutional walls, but within the wider domain of practice—is able to bring these together in an integrated, collaborative *transaction space* that includes learners, teachers, practitioners and workplaces. Conceived in this way, as a transaction space, the nomadic agile course can be thought of as a symmathesy involving the dynamical interplay between learning and work symmathesies. In its concrete application, however, it might involve multiple smaller *knots* (Engeström & Sannino, 2010) involving specific participating workplaces, the

course facilitator(s) and the learners. "The notion of the knot refers to rapidly pulsating, distributed and partially improvised orchestration of collaborative performance between otherwise loosely connected actors and activity systems" (Engeström et al., as cited in Engeström & Sannino, 2010, p. 13). The implication for the nomadic agile course is that workplace participation would need to be negotiated—both at the general level of the course, as well as on an ongoing basis for particular learning-work instances. By particular instance, I mean a specific collaborative project, internship or work placement.

However, it is not a matter of necessarily trying to shift employer attitudes and worldviews in order to elicit their participation. Rather, following Dewey, new shared understandings and practices emerge through open participatory communication—with all participants potentially being altered in some way. Consequently, what I am proposing is a general approach to integrated learning-work situations as participatory transaction spaces. As such, particular learning-work situations need to be continually negotiated and improvised *in* practice. However, to enable open communication in the first place, there does need to be a shared recognition, from *all* participants, that the teaching and learning of domain practices is the shared responsibility of everyone involved in the domain of practice—and by extension, the broader community.

Finally, just some brief comments on the duration and time involved in the nomadic agile course—which I suggest is able to be *temporally* nomadic as well as situationally nomadic. In contrast to existing NZQA sanctioned diploma and degree courses, the nomadic course does not necessarily need to have a fixed length. For example, students could be able to participate either full-time or part-time—as well as possibly drop in and out—depending on their individual life situations. As each student has their own motivations—as well as different levels of prior understanding and skills, aptitudes, and life situations—their individual learning paths need to be flexible. However, for practical reasons, it may not necessarily be open-ended either. In my experience, I would anticipate that the overall goal of becoming a web practitioner, depending on individual circumstances, can be achieved in between one to two years. In my view, for practical, hands-on, creative technology domains, three-year degree programmes are unnecessarily long. They also place too much emphasis on academic rigor, rather than practical relevance (see Schön, 1992). Graduate diplomas are also problematic as they exclude potential students who do not have previous qualifications or work experience. They also tend to lack practical focus. By operating

outside of existing qualification frameworks, the nomadic agile learning approach is able to be more inclusive, for a broader range of potential learners from a wider variety of backgrounds. It can also be more practically relevant—both in relation to what is personally meaningful for individual learners, and in relation to domain practices.

Conclusion (Contexts)

To conclude this section, then, the nomadic agile learning approach would sit within a number of different contexts. However, consistent with our pragmatist-enactivist perspective, the contexts are not static constructs, or necessarily distinct. Rather, they are complex symmathesies that are all undergoing continual dynamical change. At the broadest level is perhaps the living planet and biosphere—the *more-than-human* world that we share with all other planetary life. Within that, but deeply intertwined, is our human sociocultural-economic-material world which we make our way in—as habituated and enculturated body-mind subjects. Within that, as part of our socioeconomic practices, is the working-life world—in which sit particular domains of practice. The focus of this inquiry is the web domain of practice, which includes all the practitioners and various groupings involved in the creation of websites, web apps and apps.

Although there are implications all the way up to the level of the living planet, this discussion is primarily focused on learning to become a practitioner within the web domain of practice. In relation to this purpose, it was concluded in the previous sections that what needs to be learned is *integrated whole practice*, and how it needs to be learned is *through* practice. *Learning through practice*, following Dewey (1938), involves moving through a continuum of learning-practice situations that, for the learner, forms an *experiential continuum*. Any course of learning, then, needs to facilitate and coordinate all the individual learning continuums. However, individual learners are not atomized separate islands—they are integral parts of sociocultural communities. In this way, I envisage the nomadic agile course as a dynamically configuring and reconfiguring community of learners, teachers, practitioners and workplaces—within the broader transaction space of the domain of practice. In other words, the walls between learning situations and work situations are dissolved within the nomadic agile course as learning-work situations.

Even though individual learning trajectories and the course are considered as integrated continuous wholes, they still involve specific learning-practice situations. For individual learners, the situations that they participate in would depend on their current capabilities and can be understood in terms of Vygotsky's *zones of proximal development*. As such, I outlined three possible phases of the learning continuum, involving different levels of work-world involvement. The first, *novice* phase involves foundational learning and would involve mainly teachers and learners working together in a simulated studio *home* space. The second, *transitional* phase involves learners moving out further into the domain of practice and working together with more experienced practitioners and teachers on live work-world projects. The third, *workplace* phase involves the learners moving into actual workplace situations, involving internships and work placements. Specific learning-practice situations, however, are not templates or models that are applied in practice. Rather, they can be thought of in terms of Engeström's "rapidly pulsating, distributed and partially improvised" *knots* (Engeström et al., as cited in Engeström & Sannino, 2010, p. 13), that are dynamically co-constituted by the participants—who all learn together.

This also concludes this chapter. In the next chapter I reintegrate the themes explored in this chapter—the purpose, what is learned, how it is learned, and where and when it is learned—in a more refined and fleshed out proposition for a nomadic agile learning approach.

Chapter 8

A Refined Proposition for a Nomadic Agile Learning Approach

In this chapter, I will now bring together the various discussion strands from the previous three chapters, in a more refined and fleshed-out proposition for an integrated nomadic agile approach. It will also draw, to a certain extent, on the onto-epistemological discussion in *Part One*. In relation to the unfolding inquiry, this final iteration represents the outcome of the current research project—although not necessarily the end of the inquiry, which is ongoing. From an agile development, lean startup and design thinking/practice perspective, this iteration of the proposition can be seen perhaps as a more refined, or higher-fidelity, prototype. In relation to the expansive learning cycle, it can be seen as loosely aligning with the adjustment and enrichment phase (see *Figure 8*, *Chapter 4*). Within the Deweyan inquiry cycle it represents perhaps a looping back to the *formation of a working hypothesis* phase following the *reasoning* phase of the previous chapter (see *Figure 3*, *Chapter 2*). And for soft systems methodology it can be seen as a proposal for *action-to-improve* the problematic situation, which represents the fourth main activity (see *Figure 9*, *Chapter 4*). Although, strictly speaking, in the context of this current inquiry, this proposition represents the second iteration, it also forms part of a broader inquiry over a longer timeframe. This longer inquiry can be seen as starting back in 2011, with the problematic situation that gave rise to my original agile learning proposal (Stevens, 2013; *Appendix A*). The agile approach was subsequently tested in practice within a graduate diploma in creative technologies, which gave rise to the new problematic situation—as the starting point for this inquiry. Situated within this wider context, this latest proposition can be seen, then, as the most recent adjustment and refinement of the agile learning approach.

However, rather than using the word *proposal* for this latest iteration, I have continued with the term *proposition*—to connote a fluid and speculative *entertaining*, or *playing-with*, possible courses of action. This contrasts with the terms *proposal*, *model* or *plan*—which I feel connote a more structured and inflexible rigidity. This follows Alfred North Whitehead's understanding of the term *proposition* that, according to Sehgal (2014), takes a speculative *what if* form—as an *invitation* or *lure* to an open conversation and subsequent social action.

> The efficacy of propositions, the way they matter, is thus a suggestive one: they elicit interest, divert attention and propose a way something is taken into account and what is likewise eliminated. In this way they account for difference, divergence and novelty in the various processes of intra-action. And different subjects…feel a proposition differently, respond to it differently. It is thus the social environment, the historical and experiential world, that decides on the relevance of a proposition. In that sense, propositions have an empiricist bias; they have a particular relation to the world as it is. Always told after the fact, propositions take up the past of certain actual entities and divert their trajectory…they are one possible way of making sense of a situation and at the same time they can lure it into a new becoming. (Sehgal, 2014, p. 196)

In a similar way, for George Herbert Mead, according to Simpson (2009), "the ends and the means of social actions are co-constituting and co-evolving within social contexts that are themselves continuously changing" (p. 17). Consequently, social actions can only ever be "loosely guided by deliberate designs and plans" (Simpson, 2009, p. 17). In relation to this inquiry, then, any application of nomadic agile forms of learning in practice would necessarily be co-constituted and co-evolve within particular contexts—through open communication between the participants. Not only does this align with Dewey's theory of communication, as the coordination of joint activities in which new shared understandings emerge, it also resonates with Engeström's *expansive learning*—in which the outcomes cannot be known in advance—and Nora Bateson's notion of *symmathesies*—as dynamical, living learning contexts. This proposition, then, is my invitation to further discussion and experimental practice.

To briefly recap, this proposition is responding specifically to the constraints of institution and qualification structures that I encountered applying my original agile approach in a graduate diploma of creative technologies course. Although, it may be possible to resolve, or relax, these constraints in some way from within these structures, the object of this inquiry is to explore possibilities and opportunities for

learning *beyond* institutions and qualifications. That is not to say that this inquiry might not be able to effect changes to institution and qualification structures—it may well be a consequence—but that is not the object here. The other issue with the original agile approach was its underpinning constructivist epistemology and general pedagogical approach, with its implied mind-world dualism and strong sense of learner agency. To correct this, the nomadic agile learning approach, as well as moving beyond institutions and qualifications, also moves beyond constructivism to a pragmatist-enactivist onto-epistemology of situated knowing as *skillful-transacting-in-the-world.*

In order to give the proposition some structure, and to make it easier to relate back to the initial tentative proposition (outlined in *Chapter 5*), I have organized the sections under similar theme headings (as the tentative proposition).

Multiple Intertwined Purposes

Following the soft systems methodology (Checkland & Poulter, 2012) and expansive learning (Engeström & Sannino, 2010), the purposes of the nomadic agile approach need to be considered from the multiple perspectives of all those involved in, and affected by, the interacting learning and work activities. Directly, these include learners, teachers, practitioners and employers. However, in a more indirect way, local communities, society, the economy, government policy and the living planet are also all potentially affected. In order to accommodate all these perspectives, an integrated pluralistic approach is needed, rather than necessarily privileging one perspective over the others. I have suggested previously that there is currently a neoliberal bias in government policy—as reflected in the NZQF and in business rhetoric generally—that privileges the so-called *industry* and the economy over society, communities, people and the biosphere. On this view, the purpose of education, on the one hand, is to provide industry employers with a suitable supply of *work-ready* employees, and on the other hand, to provide learners with employability skills. This neoliberal orientation can be seen in the Bologna Process, with its emphasis on graduate *employability*, in aligning higher education with economic requirements (Sin & Neave, 2016). I suggest that this reduction of education to economic investment is an impoverished view that neglects the multi-modal experiential complexity and richness of both human sociocultures and more-than-human ecologies.

Nevertheless, the *economic* is still an important and deeply intertwined aspect of human socioculture that needs to be considered. From a pragmatist-enactivist perspective, however, rather than the economic being primary, it is the *sociocultural* that is primary—with the economic being understood as a particular form of sociocultural organization. Businesses, then, are not simply stand-alone entities that create jobs and wealth. Rather, they are sociocultural situations, or symmathesies, that are co-constituted by the dynamical sociocultural-economic relations between the participants—including the employees. Furthermore, employer businesses are part of, and co-constitute, the broader economy. As such, the economy can also be seen as a sociocultural symmathesy that contributes not only to the viability of individual businesses, but also to the wellbeing of individual humans. However, the human-orientated economy, as a complex sociocultural-material arrangement, also sits within and co-constitutes not only wider human society, but also the living biosphere and physical planet. Consequently, all our human economic activities not only affect individual people and their immediate social and material relations—they also affect the whole living planet, and beyond. As such, learning activities not only need to take into consideration the purposes of learners, teachers, employers, the economy and society, but also the ecological sustainability of both the learning activities themselves, and the domain practices. This, then, provides the overarching context and purposefulness for nomadic agile learning.

However, even within the general groupings of participants, there is still a great deal of variation in perspectives. Although the nomadic agile course might be seen generally as involving a movement, or transformation, from novice to domain practitioner, this does not mean that the purpose, or outcome, for all learners is to become *employee*-practitioners. From my teaching experience, this may well be the case for most learners. For others, however, their goal might be to become self-employed freelancers, start their own businesses, increase their skills and offerings in their existing practices, or simply to explore possible new directions. Furthermore, the very notion of *work* is changing and diverging due to the increasing casualization of the so-called *gig economy,* and automation. Consequently, being *work-ready*, as such, might mean a range of different things for different people. Rather than something that is solely determined by employer needs, it also depends on the type and structure of work that the learner ends up performing. The implication for any nomadic agile course is that it needs to be flexible and broad enough to cater for multiple purposes, that include not only different types and ways of working, but also non-work practice.

There are also meta-considerations in relation to working life in general. As well as the learning of specific domain-related skills and practices, learners need to be prepared for *adapting* to ongoing change, as well as *contributing* to change. This might include changing jobs and careers multiple times during their working lifetime. As such, the nomadic agile course needs to be flexible enough to cater for a wide range of ages and life situations—from school leavers just starting out in their working lives, through to more life-experienced learners who might be upskilling and/or changing careers.

There is also a variance of purposes amongst employers. Firstly, not all employers are *for-profit* businesses. Employers might include social enterprises and organizations, public institutions, cooperatives, partnerships or self-employed contractors. Secondly, due to changing working-employment relationships, there are not only a variety of paid and non-paid work scenarios—the very notion of what actually constitutes employment, and even work, is not necessarily clear cut. For example, self-employed, freelance contractors, while not officially employees, often perform the same roles within workplaces as employees. As such, the possible domain workplace purposes need to be broadened. The narrow purpose of *providing industry employers with work-ready graduates*, can potentially be reformulated as *increasing the pool of potential skilled practitioners to meet a wide variety of profit and non-profit requirements.* From this, it can be seen that it is actually the broader *domain of practice* itself—rather than the narrower group of *for-profit* employer businesses—that (co)creates the demand for skilled domain practitioners. As such, the nomadic agile course is not solely *for* the economic benefit of employer businesses, but rather *for*, and *constituted by*, the domain of practice—which, of course, includes for-profit employer businesses.

When expanding our notions of learners, practitioners, employers, employment and working life, rather than viewing them as clearly defined and separate participant groups, it is better to consider them all as functioning parts of an integrated whole, in which there is a blurring and overlapping of boundaries. As such, the individual participants can not only belong to more than one group, they can potentially participate in multiple, integrated, purposeful activities, or *knots*, across group boundaries. This integrated whole forms the *domain of practice* itself, as the broader learning context, or symmathesy. Situated within this context, then, the generalized purpose of the nomadic agile course might be to *facilitate the transformation of learners from novices to domain practitioners*, and through this, prepare them for

working-life in general. For teachers, then, in their role as course and learning facilitators, their purpose would necessarily align with that of the course. That is, to *help learners prepare for working life as domain practitioners*.

A Pragmatist-Enactivist Onto-Epistemology

The nomadic agile learning approach moves beyond constructivist and objectivist epistemologies to an underpinning pragmatist-enactivist onto-epistemology. Through this, the dualisms of mind-world, mind-body and theory-practice are all dissolved. Importantly, for the nomadic agile approach, the dichotomy between learning as *formation from out* and *development from within* (Dewey, 1938) is dissolved within a "world without withins" (Garrison, 2001, p. 293). Grounded in the dynamical transactional relationship between organisms and their environment, the Deweyan notion of *experience* and the enactivist notion of *cognition* are both understood in wholly naturalistic terms—as the skillful, functional coordination (enaction) of the organism with their environment. For human organisms, as minded organisms with language and culture, experience/cognition is the dynamical, functional coordination (transaction) between the enculturated and habituated whole body-mind and their sociocultural-material environment. The sociocultural environment includes both sociocultural objects and other people—with whom we transact intersubjectively through language (including gestures), intercorporeity and interaffectivity in the coordination of shared activities (Gallagher, 2016; Fuchs, 2016).

From our pragmatist-enactivist perspective, *situations* are understood as the organism and the environment taken together—in dynamical transaction. For human situations, which is the focus here, they are both sociocultural and material-physical, as well as both spatially and temporally extensive. As complex entangled events, situations can unfold dynamically in both predictable and unpredictable ways. When a situation unfolds in a (more or less) predictable way, it makes sense to us—it has *meaning,* and we *know* how to respond. From the pragmatist-enactivist perspective, *knowing* is not a representational structure in the mind of a separate external world. Rather, it is an activity—a mode of transactional experience/cognition, in which we are in *knowing* transaction with our environment. As such, knowing is co-constituted within the situation by both the habituated body-mind and the sociocultural-material environment. Knowing is always situated.

Within situations, the meaning of the objects and things of the environment is in their consequences, as affordances for action. This includes not only the meanings of the natural environment and material tools and technologies, but also other people and language. However, situated transactional experience is not just a series of separate discrete experiences. Rather, it is an experiential continuum in which past experiences live on in present and future experiences through body-mind habits—which include both intellectual (mental) habits and embodied habits as an intertwined whole. Habits can be thought of as organic body-mind structures which are predispositions to act or understand, in particular situations. In other words, they are an accumulation of experience—a type of practical wisdom. However, habits are not static structures that are applied to situations in a routine way. Rather, they are plastic and able to be dynamically transformed through experience. It is this formation, reformation and transformation of body-mind habits, then, that is understood as *learning*. And, as with knowing, learning is also always situated. Practices, understood as complex sets of body-mind habits, are consequently learned through practice (as activity) within practice situations.

When we encounter an uncertain, or indeterminate, situation—for example, one that is unfamiliar or unfolds in an unpredictable way—our existing (meaning) habits do not work and the situation does not make sense. There is a rupture or disjunction in both our knowing flow of experience, and in our habitual field of meanings (mind). At this point reflective thinking comes into play—as the process of reorganization and reorientation of the habitual field of meanings—in order to make sense of the situation and reestablish the flow of knowing experience. Reflective thought, as the conscious awareness of meanings in their remaking, is not something separate from experience. Rather, it is a mode of experience in which we transact with conceptual objects (in their meanings) through integrated organic processes of remembering, imagination and reasoning. In other words, there is a movement *within* experience between different modes. When knowing is restored, there is a subsequent adjustment or transformation of the field of body-mind habits.

To relate this general process of experimental inquiry to *learning through practice*—as practices are complex, intertwined sets of intellectual and bodily habits, *practice* experience and learning involves multiple conscious and subconscious coordinating processes over different timescales. These include subconscious bodily adjustments and attunements, lived present-moment experiences of *knowing-as-action* and

reflection-as-action, and longer narrative inquiries involving memory, imagination, reasoning, conceptualizing and theorizing (i.e., reflective practices). Practices are also situated in multiple, intertwined contexts that might include, for example, the domain of practice, the nomadic agile learning journey, particular workplaces, particular projects, workflows and technologies. Consequently, *what* is learned is not something that can necessarily be determined in advance, but rather emerges from the complex dynamical transactions (Schönean conversations) of learner-practitioners *in* practice, within multiple, unfolding practice-learning situations.

Emergent Learning Through Practice

From the discussions in *Chapter 7,* the curriculum is not something that is able to be prescribed or known in advance. Rather, from a pragmatist-enactivist perspective, *what* is learned is co-constituted by the learner's own experiential histories—as complex sets of body-mind habits—and the sociocultural-material learning environment in which they are situated. *Learning*, as with *knowing*, is always situated. The habituated and enculturated learner, taken together in transaction with their sociocultural-material environment, form the *learning situation*. Furthermore, understood as symmathesies, the learning situations themselves also undergo reorientation and reorganization—which can also be characterized as a form of learning. This is not to say that individual learners, and groups of learners, do not have purposes for undertaking the learning in the first place, or specific learning goals. Rather, these are better understood as Deweyan *ends-in-view,* not as predefined learning outcomes that are achieved. This also aligns with Mead's view that both ends and means "are co-constituting and co-evolving within social contexts that are themselves continuously changing" (Simpson, 2009, p. 17). As such, what is actually learned (i.e., the learning outcomes) can only ever be loosely guided by purposes and goals.

In my original agile learning proposal (Stevens, 2013), underpinned by my eclectic, dynamic form of constructivism, I placed the proactive learner at the center of their own *learning network*. However, from a pragmatist-enactivist onto-epistemological perspective, this is problematic. I used the network metaphor as a way of characterizing the connectedness between individual students and online resources, projects, and other practitioners—all of which were conceived as nodes within the domain of practice network. The idea was that the individual learner, as a proactive

agent at the center of their own learning network, constructed their own knowledge through intentionally interacting with other human and non-human nodes. This notion of *learning as a network*, however, not only reduces the complexity of integrated body-mind human organisms to a node in a network—it also reduces the complex organic transactions between human subjects and their sociocultural-material environments, within dynamically unfolding situations, to an engineering system. In particular, the term *network* connotes separate nodes that transmit information (or data) back and forth. However, from a pragmatist-enactivist perspective, the relationship between learner-subjects and their learning environments might be more accurately conceived as a complex, entangled multiplicity of dynamical, organic transactions within unfolding spatiotemporal and sociocultural-material situations. In this complex ecological symmathesy account of learning, the learner and other environmental objects and events are not *in* the symmathesy, as separate interacting nodes. Rather, they *co-constitute* the symmathesy, in their dynamical relations.

Relating this back to the curriculum, then, what is learned by each individual learner is not determined solely by the agential learner. Rather, it is determined by the learner *in dynamical transaction* with the tools, technologies, resources, projects and other people (as affordances) that make up their learning environment. Following Gallagher (2017), agency and intentionality are distributed across the whole sociocultural-material situation. In addition to the environment, agency is also partially determined by the sub-personal neuronal processes and affective phases of the learner. For Emirbayer & Mische (1998), agency has a temporal aspect that not only includes the present unfolding situation, but also past habits and projection forward to ends-in-view. Agency is also partly determined by embedded societal views and narratives, as well as by personal narratives (Biesta & Tedder, 2007; Emirbayer & Mische, 1998). Consequently, rather than the learner-subject being thought of as a *strong* agent in their learning, they can only ever be *weak* agents—in a similar way to Biesta's (2013) notion of *weak creativity*.

> While it is clear that educators cannot produce this event [subjectivity] in the strong metaphysical sense of the word, taking the risk, keeping things open so that the event of subjectivity may arise, is nonetheless a creative gesture and a gesture of creation, albeit in the weak, existential sense in which being is brought into life—a life shared with others in responsiveness and responsibility. (Biesta, 2013, p. 24)

As such, learning does not proceed in a regular linear or iterative way. Rather, in a similar way to William James's metaphor of *consciousness as a stream*, learning can be thought of as a "series of perchings and flights" in which "meanings are condensed at the focus of imminent re-direction only to disappear as organization is effected, and yield place to another point of stress and weakness" (Dewey, 1929, p. 312). However, even though individual learning journeys may unfold in a "series of perchings and flights" towards shifting and co-evolving ends-in-view, at the general level of preparing for working life as a domain practitioner, what is being learned can be characterized as *integrated practice*. From the discussion in *Chapter 7,* domain practices are necessarily whole integrated processes of thinking and making. Not only do we think through making, we also make through thinking. From a pragmatist-enactivist perspective, thinking is not only *for* action, it *is* an action. It is something we do. As such, in our notion of *integrated practice*, there is no separation between thinking and action, theory and practice, soft and hard skills, mind and body, and mind and world. All dualisms are dissolved within integrated whole practice.

Although domain-specific tools, technologies, materials, conceptual frameworks, methodologies and methods are all essential aspects of domain practice, they are not necessarily ends-in-themselves. Rather they are instrumental means, or tools, to be used in application to resolve ill-defined design and development problems—within dynamically unfolding and unstable practice-work situations. As such, from a pragmatist-enactivist perspective, integrated practice is essentially problem resolving—or rather, multiple, entangled problem resolvings over different timescales. Understood in terms of Deweyan experimental learning and inquiry, the multiple problem resolvings are both the learning method as well as what is being learned. In this way, the general pedagogical approach can characterized as *learning through practice*. As practice situations are also sociocultural situations, often involving working collaboratively with other practitioners, an important part of practice is effective and open communication in the coordination of shared activities. In this way, communication and language can be regarded as practice tools—that are also learned through practice.

The general pedagogical approach of *learning through practice*, then, is always *situated* within sociocultural-material practice situations. In this way, the focus shifts from the individual learner-agent constructing their own knowledge, to emergent learning and knowing that is distributed across the body-mind learner and their

sociocultural-material environment. However, practices and practice situations are not stable structures that novices can be simply inducted into. Rather, they are dynamic and constantly changing symmathesies—as living learning contexts. Within practice situations, not only do the individual participating students, teachers and practitioners learn—the situations themselves (including workplaces), as well as the wider domain of practice, are also continually learning. However, the dynamically changing nature of practices and practice situations are not necessarily an impediment to learning. Rather, the practices of adapting, adjusting and attuning—which are themselves forms of learning—are also learned *through* practice. In this way, *problems*—whether they are ill-defined design challenges, technical issues, unfamiliar situations, interpersonal social issues, etc.—provide the opportunities for learning. It is through problem resolving, which is at the core of practice, that we simultaneously learn about the conditions of the specific problems being resolved, and about problem resolving itself. In this way, we continually become more experienced and skillful domain practitioners.

To summarize, then, rather than there being a general course curriculum, the course is made up of multiple emergent and intertwined individual curricula. What is actually learned by individual learners, and the group, emerges from the sociocultural-material practice situations in which they participate. As such, what is learned is always in relation to the current context of the particular practice problems and projects being resolved. However, as these are all in a continual state of flux, practitioners are also continually learning—both within unfolding situations and in their encounters with new and unfamiliar problems. As such, part of what is being learned are practices of adaptation and adjustment to different situations, including new and emerging technologies and practices.

Nomadic Agile Learning Situations

In my tentative proposition (in *Chapter 5*), I suggested that the nomadic agile course does not necessarily need to have a fixed physical location. Rather, learning situations can potentially take place in, and across, a variety of different physical locations— including remote locations. In this way, both the individual learners, as well as various groupings of learners (including the whole course cohort), can be considered to be nomadic. Physical locations included shared studio spaces, workplaces, and public spaces—such as cafés, libraries, maker spaces, urban lounges, etc. However, as with

the pedagogical approach, I had not sufficiently taken account of the sociocultural and affective nature of learning spaces—treating them in a disconnected way from the learners. Although there still needs to be flexibility and agility in relation to when and where learners undertake learning activities, the learning situation is not just a physical space—it is also sociocultural, affective and temporal. In other words, the focus needs to be on the whole sociocultural-material situation, rather than just the physical location of the learner or group learning activities. Furthermore, physical spaces are not neutral—they are infused with meaning and emotion, which form part of the learning situation. From this perspective, and following the discussion in *Chapter 7*, the nomadic agile course might be better to have a *home* studio space in a consistent location. This would be where students might initially participate in foundational learning activities (i.e., simplified practice situations), and from where they are able to branch out, on their nomadic learning journeys. At the same time, the home space potentially provides a stable location that the nomadic learners are always able to return to, and perch for a while—even if only to meet and socialize with other learners—before taking flight again. In this way, it could provide a sense of place or belonging to a community of learners, as well as emotional support, encouragement and motivation. Having said that, the home studio space would not be somewhere that would be mandatory to attend, or report to. Rather, it would be somewhere that is available and open, if needed—in a similar way to a community center. Individual learners can still be involved in remote and collaborative learning activities, in any number of other physical locations and practice situations. In this way, it is the learning activities—for example, tutorials, workshops, exercises, individual and collaborative projects, work placements, internships, etc.—that constitute the learning situation, not solely the physical location. As such, learning situations can be distributed over multiple different physical locations.

Although the nomadic learning journey forms a continuum from novice to professional practitioner, for practical pedagogical reasons it is useful to make a distinction between different possible phases of the journey. These can be thought of as aligning with the learners' zones of proximal development, and would depend on their current capability and understanding. The first phase relates to an introduction to the foundational domain tools, technologies, materials, conceptual frameworks, coding languages, methodologies, methods and problem-solving techniques. It also includes introducing learners to open, online domain learning resources—such as interactive coding tutorials, magazine sites and language references. In my original agile proposal

(Stevens, 2013), I characterized this initial phase of learning as *connecting* students to the domain of practice. However, I now feel that the term *connecting* connotes a type of *plugging-in,* which possibly implies a dualism, or separation, between the individual learner-practitioner and the domain of practice. A more accurate way of characterizing the relationship between the learner and the domain of practice might be with the terms *situated in* or *immersed in*—connoting an *entering-into*, rather than a *connecting to*. From this perspective, learners are instead *introduced* and *invited* to participate in the domain of practice—in which they learn through their situated transactions with other practitioners, resources, projects, and practices. The foundational phase would mainly involve a combination of teacher-led workshops, tutorials and worked examples—as well as learner-directed exercises and student projects. All of these might take place within the physical location of the home studio space—configured as a simulated workplace studio—but could potentially be distributed across other locations.

The second phase can be thought of as more of a transition phase, in which learners start to tentatively venture out into the domain of practice, in a more nomadic way. Learning situations in this phase might include working on live work-world collaborative projects—involving more experienced practitioners and teachers. Examples of how this might work are the Finnish learning by developing (LbD) approach (Taatila & Raij, 2012), and The Kauri Lounge project which I was involved in with a group of interactive design students (see *Chapter 7*). These collaborative projects form the learning-practice situations in which the learners and other participants all learn together through their shared activity. Other learning activities and situations during this transition phase might include: practitioner mentoring of students (working on their own projects), the formation of communities of practice (involving more experienced practitioners), practitioner-led talks and workshops, workplace visits, and short work placements (shadowing).

In the third phase, learners move fully into work-practice situations where they participate in actual work-world activities. These might take the form of longer work placements, internships (paid or unpaid), part-time work and graduate programmes. In these situations, they might be mentored formally or informally by more experienced colleagues. Through their participation in work-practice situations they are able to learn not only about the work practices, but also about workplace cultures and attitudes. Individual learners could work across a variety of different workplaces, for a

variety of different types of employer and types of work. These situations can give both the learner-practitioner and the employer the opportunity to evaluate each other and may lead to permanent work. However, although I have presented the learning journey as three different phases, they actually form a continuous movement from novice to professional practitioner. For the individual learner, then, this represents an experiential learning continuum in which past learning experiences live on in present and future learning experiences, through the formation of complex sets of habits (Dewey, 1938). The implication for nomadic agile learning is that the particular learning situations need to lead, or open, to further learning situations—but in an agile, responsive way.

Notwithstanding the general flexibility of where learning activities can physically take place, particular learning situations will have their own specific requirements. As team members on collaborative projects and interns in workplaces, learners will need to meet certain requirements in relation to those commitments. For example, at the novice stage, they may need to attend foundational workshops and demonstrations at a particular time and place. Working in a team might require daily face-to-face stand-up meetings, working together in close proximity and remotely coordinating tasks. Work placements and internships, within actual workplace situations, will have their own set of rules, protocols and cultural norms that learners will need to adhere to. So, although learners might be nomadic in the sense that they potentially work and learn across a variety of locations and situations, they are not necessarily free to work anywhere, at any time. The nomadic agile nature of the course would also not necessarily preclude it from operating within or across the physical spaces of existing educational institutions. These might include sharing school, university, technical institute and PTE spaces. For example, underutilized space in technical institutes could be shared with other smaller, specialist, nomadic agile course organizers over a number of locations, as a way of integrating with local communities.

A Transaction Space

In my tentative proposition (*Chapter 5*), I characterized the nomadic agile course as a *transaction space* across the boundaries between learning and work activity systems. However, this requires further elaboration as to what it means. McMillan et al. (2016), in their article "Illuminating 'Transaction Spaces' in Higher Education: University–Community Partnerships and Brokering as 'Boundary Work,'" take a third-generation

activity theory perspective. Through this lens, they use the term *transaction space* (Gibbons, as cited in McMillan et al., 2016) to characterize the "transaction/boundary zone" in which community–university transactions take place, in relation to community-orientated university research.

> The notion of *transaction space* shifts the metaphor from translation across boundaries to dialogue at boundaries….Boundary work needs to be facilitated and managed and as a result specific knowledge and skills are required…engagement as a core value will be evident in the extent to which universities do actually develop the skills, create the organizational forms and manage tensions that will inevitably arise when different social worlds interact. [T]o embrace this form of engagement entails that universities themselves be prepared to participate in those potential transaction spaces in which complex problems and issues will be initially and tentatively broached. (Gibbons, as cited in McMillan et al., 2016, p. 8)

In the nomadic agile learning approach, however, boundaries between activities and organizational entities—for example, between learning activities and work activities—are not as easily defined as in traditional educational contexts. Rather than there being an identifiable transaction space between learning and work activities, the nomadic agile course, as such, *becomes* the transaction space. In a similar way, the wider domain of practice can also be thought of itself as a transaction space—the space where domain activities, organizations and people transact. However, although the learning course, as a conceptual whole, might be dissolved into the domain of practice, there are still definable and separate activities and situations, within which individual learners move around and transact within. These smaller, local-level activities and situations can also be thought of as transaction spaces—involving learners, practitioners and teachers. Initially, these might be dedicated learning situations, such as workshops and tutorials, but as learners progress, they become increasingly involved in work situations with defined boundaries. Workplaces and collaborative projects, for example, will all have their own distinct practices and sociocultures. So, even though the general learning course can be characterized as a transaction space, it is co-constituted by multiple, smaller transaction spaces (e.g., specific collaborative projects and internship instances) involving individual learners, teachers and practitioners. Furthermore, all of these smaller transaction spaces require ongoing brokering through negotiation and open communication. Teachers, as learning facilitators, then, also need to be brokers (or boundary workers), who not only potentially participate in the transaction spaces, but who need to communicate between different sociocultural worlds.

Approaching the nomadic agile course and the individual learning situations as negotiated transaction spaces also gives us a way of potentially closing the perceived *expectations gap* between learning and work situations. Not only do particular learning situations—such as collaborative projects and workplace internships—need to be continually negotiated and brokered, the general participation of workplaces in the nomadic agile course also needs to be negotiated and brokered, on an ongoing basis. Through these on-going negotiations and renegotiations, new shared understandings and objects are able to emerge—and attitudes and orientations can be shifted. This is not to say that individual participants (learners, teachers and employers) will not still have their own purposes, worldviews, and agendas. However, through the coordination of shared activities, they are able to perhaps gain a better understanding of each other's perspectives—and come to see that they are all mutually interdependent, co-constituting parts of the domain of practice.

Emergent Timeframes and Configurations

In contrast to NZQA accredited courses, the nomadic agile course would not necessarily start or finish at the same time for all students, nor have a set number of *contact* and *self-directed* hours. Learning would also not sit within the NZQF hierarchy of defined learning levels. Rather, where and when learners enter and leave the course, as well as how much time they dedicate to it and the so-called *level* of their learning, would necessarily vary. This would not only depend on the individual learner's prior skills and understandings, purposes (ends-in-view), aptitudes and life situations, but also on the particular learning situations that they participate in, the situations available to them, and the other learners. For example, for learners whose end-in-view is to become a professional domain practitioner, their involvement with the course might end when they find paid employment. In the case of others, who might just want to explore and find out more about the domain of practice, they would have the option of ending their involvement earlier—if it turns out not to be for them. The nomadic course would also allow for learners to drop in and out of the course, depending on their life situations. In my teaching experience, I have had a number of students over the years who, for various reasons, have not been able to continue at that time on their respective courses. By taking a more open, flexible and empathetic approach, it might have made it easier for them to return and carry on—without the stigma of dropping out. Without set time requirements, learners with other work or family commitments could be involved on a more part-time basis, and be free to vary

their time commitments around their changing situations. With learners starting and finishing at different times, coming and going, and increasing and decreasing their participation, it might not be even be characterized as a *course* at all (in the usual sense of the word). Rather, it might be more accurately described as an emergent community of learners that is continuously being configured and reconfigured—in other words, as a symmathesy.

No Qualifications or Assessment Required

One of the central tenets of the proposition for a nomadic agile learning approach is that qualifications, at least in their current form prescribed by the NZQF, necessarily constrain agility and flexibility—and consequently constrain learning. However, as I mentioned earlier, this does not necessarily preclude possible alternative forms of qualifications being appropriate for nomadic agile forms of learning. For example, a series of micro-credentials (NZQA, 2018) could possibly align with nomadic agile learning, in some way. The main problem, however, with any form of qualification, is how to quantify and measure what has been learned, and against what criteria. This presents a problem for individual emergent curricula, without prescribed learning and graduate outcomes. Furthermore, even if it were possible to determine the learning outcomes in advance, there is still the problem that any assessment of student learning is necessarily qualitative, and not so easily quantified in the form of grades.

However, this does not mean that student *knowing* and *learning* are not able to be evaluated at all. Rather, evaluating what learners are able to do (i.e., their capabilities) is situationally contingent, in the same way as evaluating what practitioners, in general, are able to do in workplace situations. In workplaces, as sociocultural situations in which practitioners work together, awareness and evaluation of each other is necessarily part of all intersubjective communication. In our understanding and making sense of intersubjective situations, we are aware (even if only subconsciously) of what others are doing, what they can do, and what their limitations are. Experienced practitioners are able to *read* the work, actions and attitudes of their colleagues. They have a *sense* of them and what they can do. It is this evaluative *sense* that other practitioners have of each other, that provides the basis of evaluating learner-practitioners within practice situations. In other words, they are able to be evaluated by their colleagues on the basis of their ability to perform the work and contribute to the team. As such, the workplace symmathesy itself *knows* when

learner-practitioners are *work-ready* and are able to *graduate* from intern-practitioners to professional practitioners. As such, I argue that qualifications and quantified grading assessment are not required. Rather, learner-practitioners are simply *ready* to work when they can (i.e., when they are capable). In this way, their qualification *is* their learning-work experience—made tangible in their work.

This evaluative sense can also serve as the basis for embedded formative assessment (Wiliam, 2011). This might take the form of more immediate, situated feedback or guidance from more experienced practitioners, within learning-practice situations. Formative feedback could be provided by teachers, professional practitioners or other more experienced peers—as other participants in the collaborative projects or workplaces. This on-going evaluation can also provide the basis for learners moving through the different phases of their nomadic learning journey. For example, evaluating when a learner-practitioner is *ready* to move on from the foundational phase, to working on collaborative work-world projects with more experienced practitioners.

Consistent with the absence of formal assessment and qualifications at the completion of the nomadic agile course, there would not necessarily be any prescribed prerequisites to participate in the course. This allows for people who might not have any previous formal qualifications, who might otherwise be excluded—for example, people who have not completed school or other formal learning courses. As there are no specific time limits for any of the phases of the course, learners are able to stay in the foundational phase for as long as necessary, until they are ready to move on. This contrasts with traditional, fixed timeframe course structures where everyone moves on together—regardless of whether they are ready or not.

Community Participation

I included some comments on community involvement in my tentative proposition (in *Chapter 5*) and although this ended up as something that I didn't necessarily explicitly develop further, there are a few things that have emerged that are worth mentioning briefly. The main suggestion was that the nomadic agile learning approach might be able to be adapted to other situations and domains, to serve local communities in a more decentralized way—devolving learning from larger institutions and government policies to the local community level. Communities can, of course, take a number of

forms—they might be based around local neighbourhoods, but could also be communities of practice, communities of businesses, or centered around other community organizations such as schools and unions. The course itself also constitutes a community of learners. Nomadic agile learning inverts the structure of traditional centralized learning approaches—of top-down implementation of government education policies, qualifications and standardized curricula—to a ground-up, self-organizing ecology of emergent learning. I suggested that local community facilities could be utilized for this purpose—potentially by anyone, or any group, wanting to organize courses. However, the nomadic agile approach, as presented here, is not a model or template that can simply be applied in practice to all situations and domains of practice. Rather, each particular instance would necessarily co-emerge—as symmathesies, or knots—from the particular contexts, the participants involved, and their various purposes. Pedagogical approaches, as well, are not things that can necessarily be generalized and applied in all situations, but rather co-evolve in the unfolding of learning situations, and in response to learners involved.

However, what I am advocating here is not a form of anti-government, anti-institution neoliberalism or libertarianism—that privileges the atomized individual. Rather, it is based on the Deweyan understanding of humans as sociocultural beings. Individual body-minds are always part of sociocultural wholes that, in part, define us and in which we feel at home (Dewey, 1929). However, not only are we partly defined by the sociocultural worlds that we are part of, in our open communication with others, we also co-constitute our sociocultural worlds. It is in this way, as integrated, co-constituting parts of sociocultural wholes, that learning and education can be reconceived as local sociocultural practices—rather than being something that is imposed by governments and institutions. This is also the essence of Dewey's notion of democracy, which involves members of local communities actively participating in decisions that affect their community. This contrasts with the usual understanding of democracy (as a political system), in which atomized and disconnected individuals vote every few years for a particular government—which then implements their policies from the top down. Dewey's concept of participatory democracy has parallels with George Monbiot's (2019) call for the *rewilding* of the environmental and political landscape, based on *radical trust.* In relation to political rewilding, which I suggest can also apply to education and learning, Monbiot writes:

> The much bigger change is this: to stop seeking to control people from the centre. At the moment, the political model for almost all parties is to drive change from the top down. They write a manifesto, that they hope to turn into government policy, which may then be subject to a narrow and feeble consultation, which then leads to legislation, which then leads to change. I believe the best antidote to demagoguery is the opposite process: *radical trust* [emphasis added]. To the greatest extent possible, parties and governments should trust communities to identify their own needs and make their own decisions. (Monbiot, 2019)

Summary / Conclusion

To summarize this chapter, then, the nomadic agile learning approach I have outlined here is not a generalized template or proposal that can be applied in practice to all situations. Rather, it is a speculative proposition—an open invitation to a further conversation. In keeping with the central theme of *dissolving the walls*, the open conversation represents a dissolving of the boundaries between different perspectives and traditions—towards possible new shared understandings and practices. The purpose of any particular nomadic agile course depends on its particular context, and emerges from open discussion between the participants. In the case of the web domain of practice, the purposes of employers, learners and teachers are dissolved into a shared understanding and purpose of *preparing for working life as domain practitioners*.

The nomadic agile learning approach is underpinned by a pragmatist-enactivist onto-epistemology of situated knowing—as skillful transacting-in-the-world. Through this, it is possible to move beyond objectivist and constructivist notions of learning as *development from without* and *formation from within*. Body and mind, mind and world, thinking and action, and theory and practice are all dissolved into a naturalistic notion of experience—as the dynamical transaction between encultured subjects and their sociocultural-material worlds. Learning, understood as the transformation of body-mind habits, emerges *in* practice within complex, unfolding practice situations. As such, what is learned cannot be known in advance—either in the form of prescribed learning outcomes, or by the agential learner. Rather, it is determined by the learning-practice situation which, as a symmathesy, also learns. However, as the general purpose is to become a domain practitioner, generally what are being learned are domain practices. From our pragmatist-enactivist perspective, practices are understood as complex sets of embodied and intellectual habits. As learning emerges

from experience, the learning of practices emerges from the experience of practice. In *learning through practice*, practice is always an *integrated* practice—involving hard and soft skills, thinking and making, and communication with other practitioners.

Rather than learning solely within dedicated learning situations or work situations, the nomadic agile approach can be conceived as a transaction space in which the walls between learning activities and work activities are dissolved, in a learning-work-practice continuum. In this way, the domain of practice, the nomadic agile course and particular practice-learning situations can all be understood as both *transaction spaces* and *symmathesies*—i.e., living, learning contexts. However, for practical pedagogical purposes, the nomadic agile learning journey can be divided the into three phases. The first phase is the foundational phase and would be organized around a dedicated home space, involving mostly teachers and learners. The second phase is a transitory phase in which students start to move out nomadically into the domain of practice. This might involve learners working collaboratively with more experienced practitioners and teachers on live work-world projects. The third phase would involve learners being fully immersed in workplace situations. The phases, however, are not necessarily fixed or defined stages. Rather, they form a continuum in which learners navigate nomadically through multiple learning-practice situations—depending on their individual ends-in-view and zones of proximal development. As such, learning journeys do not have fixed timeframes, with the time it takes depending on a number of variables, including life situations. Learners would be free to participate fulltime or part-time, as well as drop in and out.

Due to the emergent nature of the learning outcomes, the nomadic agile course would necessarily need to sit outside the existing New Zealand Qualifications Framework, with its requirement for predefined learning outcomes and learning levels. It also means that assessment, as the evaluation of student learning against predefined learning outcomes, does not make sense. However, teachers and employers are still able to assess learners' capabilities informally, to give feedback and guidance. Their capabilities and experience are also made tangible in their portfolio of work. Freed from qualification constraints, the nomadic agile course potentially becomes more open and inclusive for a more diverse range of learners. In a similar way, the nomadic agile approach opens up opportunities for greater community participation in learning—both in organizing courses and participating as learners. This might potentially lead to a ground-up *rewilding* of learning and education, that gives decision

making and control back to local communities. In other words, learning *for* communities, *by* communities.
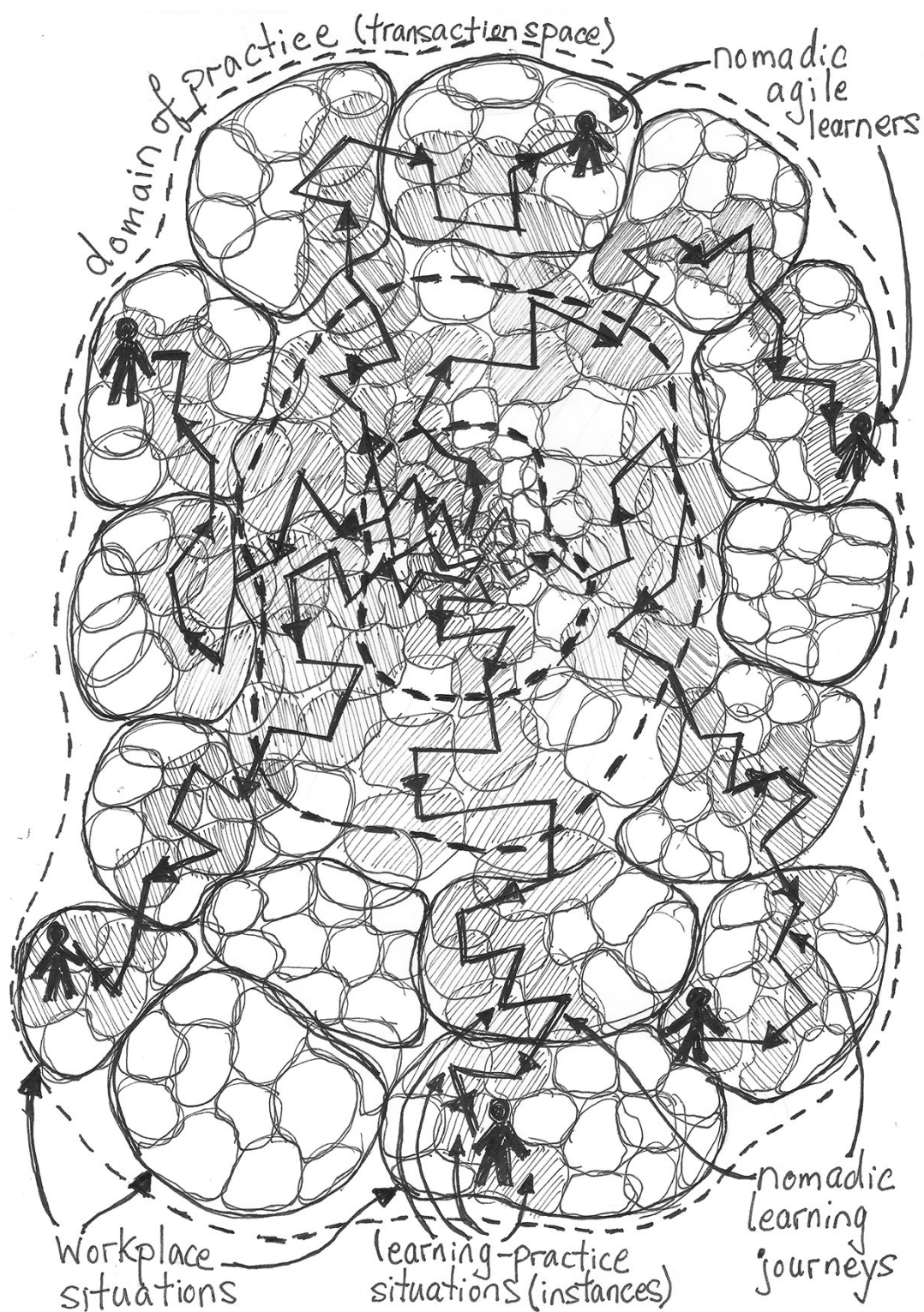

Figure 19. The nomadic agile course as an entanglement of multiple, emergent nomadic agile learning journeys within the transaction space of the domain of practice.

The diagram above in *Figure 19* shows the nomadic agile course as an entanglement of multiple, emergent nomadic agile learning journeys—weaving their way through a continuum of unfolding learning-practice situations, within the transaction space of the domain of practice. Each of the smaller shapes represents a learning-practice situation instance—as a *symmathesy*, or *knot*. The area inside the innermost dashed line represents the foundational phase, in which the learning-practice situations mainly involve learners and teachers. The area between the dashed-lines represents the transitory phase, in which the learning-practice situations revolve around collaborative projects involving learners, teachers and more experienced practitioners. The outermost shapes represent workplace situations, made up of multiple work learning-practice situations (instances). The zigzag lines represent nomadic journeys navigating their way through a continuum of unfolding learning-practice situations—which also dynamically unfold.

Conclusion / Summary

Dissolving the Walls is grounded in my own lived teaching experience over the last decade. Although it officially begins with the tensions and contradictions I experienced when applying an agile learning approach within a graduate diploma of creative technologies, between 2014 and 2016, it actually stretches back beyond that, to when I first started teaching in 2008. In 2013, in response to the issues I experienced teaching on a diploma course in web design and development, I developed a proposal for an agile approach to the teaching and learning of creative technologies, as part an honours degree at AUT. The main issue that my colleagues and I faced was the lack of flexibility in delivering a one-size-fits-all prescribed curriculum to all students, regardless of their backgrounds and aptitudes. This was compounded by the fact that the web domain was changing so rapidly, which made it very difficult to keep the curriculum, and our own knowledge, up to date. Often what was taught at the beginning of the course was out of date, or obsolete, by the end. In response, the agile approach proposed individualized, flexible curricula, connecting learners directly to the *domain of practice* (in which they learn as participating practitioners), iterative, whole project-based learning approaches, and leveraging open online learning resources. The agile approach was subsequently applied in practice in a graduate diploma course over a three-year period, from 2014 to 2016. Although there were a number of teething problems, these were mostly able to be dealt with in the day-to-day unfolding of the course. However, at a more fundamental level, there remained major structural tensions and contradictions between the agile approach and the dominant models of prescribed curricula and defined learning outcomes—embedded within educational institutions and qualification frameworks. It was these tensions and contradictions that provided the starting point for this inquiry and my tentative proposition for a *nomadic* agile learning approach, beyond the *walls* of institutions and qualifications.

Underneath these tensions lies a core contradiction between different worldviews and epistemological beliefs, and it is these that I turned to firstly in *Part One*—in order to establish a suitable epistemological frame for both agile learning and this inquiry. In my original proposal, influenced by rhizomatic learning and a limited understanding of enactivism, I promoted agile learning as a *dynamic* constructivist approach. However, I was not entirely satisfied with this, or with constructivism generally, as an

underpinning epistemology. In particular, I felt that it did not sufficiently account for the relationship between individual *knowing* and objective *knowledge*, what it means *to know*, and how we actually *come* to know. For any learning theory and approach, these are fundamental questions that need to be addressed. In my agile learning proposal, I claimed that learners learn through interacting with other people, projects and resources—but did not offer any further explanation of how this happens, other than that they dynamically construct their own knowledge. These issues, then, form the epistemological problematic explored in *Part One*.

In order to move beyond the dichotomies between individual subjective knowing and objective bodies of knowledge, and between learning as *development from within* and *formation from without*, I firstly turned to Deweyan pragmatism. As a naturalistic *theory of knowing*, pragmatism is able to dissolve the dualisms of mind-world, mind-body, theory-practice and thinking-action. At the core of Dewey's philosophy is his notion of *experience*, as the transaction between organisms and their environment—which for human organisms, is both sociocultural and material. Taken together, the organism and the environment, in dynamical transaction, form the *situation*. Experience and experiences, however, live on in future experiences, in an *experiential continuum*, through *habit.* Habits are the predispositions of the organism to act in certain ways in particular situations, based on past experiences, and are both intellectual and embodied. For Dewey, *knowledge* does not exist as something separate or external to the integrated body-mind organism. Rather, *knowing* is a dynamic and fluid mode of transactional experience between the habituated and encultured human subject and their sociocultural-material world. As such, *knowing* is always situated. Rather than being considered strictly as an epistemology, then, Dewey's *theory of knowing* is better characterized as an *onto-epistemology. Mind,* on the Deweyan account, is the broad, underlying background field of *meaning* habits that emerge in human organisms through communication and language, within sociocultural worlds. As such, individual minds have both a subjective and an objective aspect. As subjectivities, they each have their own unique, experiential histories and perspectives. In their objective aspect, they are integral functional parts of shared sociocultural worlds. For Dewey, *learning* is the functional process of formation and reformation of body-mind habits that occurs in response to disruption in the flow of knowing experience. This process of experimental learning and inquiry involves integrated thinking and action—as different modes of experience. Learning, as with knowing, is also always situated.

Following the discussion of Deweyan pragmatism, the epistemological inquiry then moved on to a comparative discussion of other similar action-orientated perspectives. Donald Schön's notions of *knowing-in-action* and *reflection-in-action* provide an account of the situated in-the-moment adjustments and attunements to momentary uncertainty. As such, they are able to provide us with a more nuanced understanding of the fine-tuned experimental learning involved in the living present of practice. Vygotsky's *activity theory*, despite some underlying differences with pragmatism, in relation to the mediating nature of sociocultural artefacts, can still provide some useful insights into shared activity systems—as well as conceptual tools such as the *zone of proximal development*. Phenomenological perspectives—especially the existential orientations of Heidegger, Gadamer and Merleau-Ponty—can also be understood as onto-epistemologies of knowing-in-the-world. Merleau-Ponty's phenomenology of embodiment, which provides the philosophical roots for *enactivism*, has strong similarities to Dewey's notion of the integrated body-mind. In addition to phenomenology, enactivism also draws on evolutionary biology and contemporary cognitive neuroscience. In a similar way to pragmatism, enactivism also has a non-representational, embodied understanding of cognition—as skillful, embodied enaction in-the-world. Understood in terms of the dynamical interaction between organisms and their environment, the enactivist notion of *cognition* has a strong similarity to Dewey's notion of experience. Although pragmatism and enactivism come from different backgrounds, they are both able to inform each other. Pragmatism is able to provide the overarching philosophical framework that can bring together enactive, embodied, extended and embedded theories of mind under one umbrella. Enactivism, on the other hand, is able to offer pragmatism richer contemporary cognitive neuroscience and anthropological accounts of cognition/experience. I touched briefly on Karen Barad's *agential realism*, as a similar onto-epistemology of material-cultural *intra-actions*, that is perhaps able to contribute to a deeper understanding of the phenomenal structure of experience*. This was followed by a short discussion of Derrida's deconstruction and how poststructuralist perspectives might be able to contribute to the problematizing of situations. By bringing together insights from these different perspectives, the walls between them are able to be dissolved to gain a deeper understanding of *knowing* and *learning*—*as* and *in* lived human experience.

What emerged from *Part One* was a *pragmatist-enactivist onto-epistemology* of situated knowing as *skillful transacting-in-the-world.* Relating this back to our original

epistemological problematic—of the dichotomies between subjectivist and objectivist perspectives and between subjectivist and social constructivisms—by dissolving the traditional boundaries between ontology and epistemology in this way, the walls between individual subjective knowing and collective intersubjective (sociocultural) knowledge can also be dissolved. As deeply integrated functional parts of the sociocultural whole, individual subjects both emerge from, and contribute to, their sociocultural worlds through their intersubjective transactions with other people and things. What are generally thought of as objective things and meanings, are actually habituated *interpreted* meanings—formed and reformed through on-going transactional experience(s) within sociocultural-material worlds. The pedagogical implication is that learning needs to be approached in an integrated way as both *development from within* and *formation from without.*

Having established an onto-epistemological frame, in *Part Two* I returned to the pedagogical problematic of the learning situations themselves. In general terms, the pedagogical inquiry can be seen as an unfolding Deweyan inquiry. However, as pragmatism does not advocate any particular methodologies or methods, I draw on a toolkit of related approaches that includes *expansive learning*, *soft systems methodology*, *design practice*, *agile development* and the *lean startup* methodology. The inquiry begins, then, with the problematic situation I experienced in my own teaching practice, applying an agile learning approach within a graduate diploma of creative technologies course. At the core of the problematic situation were the tensions and contradictions between the agile approach and dominant education models, embedded within institution and qualification structures. In particular, traditional educational notions of prescribed curriculum and defined, measurable learning outcomes stood in contradiction with the agile learning notions of flexible individualized curricula and emergent learning outcomes. There was also a more general disconnect between the "bureaucratically based epistemology of the schools" (Schön, 1992, pp. 120-121) and the everyday world of domain practices. However, rather than trying to resolve these tensions from within institutions and qualifications, I formulated a tentative proposition for a *nomadic* agile learning approach that moves beyond the constraints of educational institutions and qualifications—out into the *transaction space* of the wider domain of practice. Within the transaction space, the boundaries between learning activities and work activities are dissolved to form integrated *learning-work* activities, in which learners participate directly in the everyday world of domain practices.

Following a general *design practice* approach, the tentative proposition, as a type of low-fidelity prototype, was used to further explore the problematic situation. This follows Cross's (2006) call for a solution-led design inquiry approach, distinct from traditional academic problem-led inquiry approaches. Loosely following the *finding out* phase of the soft systems methodology, I then set out to collect the perspectives of the other main participants in the wider learning-work activities, through a series of semi-formal discussions. These included former students, teaching colleagues and domain employers. The collected perspectives were then used as the basis for more in-depth discussions and analysis. These were organized around four main themes. The first theme related to the *purpose* of the proposed nomadic agile course, and how the different perspectives might be accommodated and resolved within a more general purpose. The second theme related to *what* specifically needed to be learned (the curriculum) in order to become a domain practitioner. This centered around how the various practices and skills involved in interactive design and development can be integrated within a pragmatist-enactivist conception of integrated whole practice. The third discussion theme related to *how* whole integrated practices are learned (the pedagogy). From our pragmatist-enactivist perspective, this focused on how the learning of practices happens *through* practice—within dynamically unfolding learning-practice situations. The final discussion theme was around the nature of the learning-practice situations—as learning-work transaction spaces—involving learners, teachers, practitioners and workplaces. This included how learners might move through different learning-practice situations, in their continuously unfolding nomadic learning journeys.

The discussions and analysis then led to a more refined and fleshed-out proposition for a nomadic agile learning approach—as a higher-fidelity prototype. However, rather than being a learning *model* that can be applied generally to all situations, the proposition takes a speculative *what if* form—as an *invitation* to an open conversation. In relation to the purpose of the nomadic agile course, the different perspectives and expectations of employers, learners and teachers need to be accommodated and dissolved within a new shared understanding. Employers generally see the purpose of learning courses as being to provide them with *work-ready* graduates, while teachers view education and learning as a more general preparation for life. Students also have an expectation to acquire employment-related skills. However, rather than considering employability skills and life skills as separate distinct things, these were brought together as *working-life* skills—resolving the different purposes into the more general

form of *preparing learners for working life as domain practitioners*. In this way, rather than employers, teachers and learners being separate groups—with their own distinct and conflicting purposes—they are dissolved within the transaction space of the *domain of practice*, as interdependent functioning parts.

What needs to be learned, then, in order to become a domain practitioner, are *domain practices*. From our pragmatist-enactivist perspective, individual practices are understood as complex sets of body-mind habits. Domain practices include the use of domain specific tools, technologies, materials, conceptual frameworks, methodologies and methods. However, rather than being separate skills that are learned as ends, they are means, or tools, used to resolve often ill-defined design problems within dynamically unfolding practice situations. Consequently, they need to be learned in the practice of problem resolving, following a general pattern of Deweyan/Schönean experimental learning and inquiry. As workplace and practice situations are always sociocultural situations, domain practices also necessarily involve open communication for coordinating shared activities. In this way, domain practices are always integrated whole practices—in which the boundaries between thinking and making, soft and hard skills, mind and body, and mind and world are all dissolved.

Rather than the nomadic agile course being defined by a prescribed curriculum or learning outcomes, it is dynamically co-constituted by multiple emergent and intertwined individual curricula. What is *actually* learned, then, emerges from the sociocultural-material practice situations in which the learners participate. As such, learning is always in relation to the current context of the particular problems being resolved and the projects being worked on. However, as practice situations are continually unfolding—in both predictable and unpredictable ways—learner-practitioners are also learning practices of adaptation and attunement, including to new technologies and other people.

On the pragmatist-enactivist view, learning emerges from the dynamical transaction between habituated and encultured body-mind learner-practitioners and their sociocultural-material environments. As such, domain practices are learned *through* practice, within practice situations. However, practices and practice situations are not stable structures that learners can simply be inducted into. Rather, they are living learning contexts, in which not only the participating learners and practitioners learn, but also the practice situations themselves can be said to learn. In this way, following

Nora Bateson (2015), they can be characterized as *symmathesies*—in which individual subjects and the learning contexts themselves mutually learn together, in dynamic interrelationality. Within these learning-practice symmathesies, learners are embedded in multiple intertwined contexts, that are in turn part of the complex interrelational living domain of practice. The implication for nomadic agile learning is that learning approaches, and learning-practice situations, need to be agile and responsive—both to changing domain practices and to the participating learners, teachers, practitioners and workplaces. In their sociocultural aspect, practice-learning situations involve complex intersubjective transactions with other people. These involve not only language, but also intercorporiety and interaffectivity, which are also learned through interacting with other people, within practice situations. As such, learning-practice situations need to be empathetic, supportive and encouraging towards the learner-practitioners. In this way, both the general nomadic agile course, and particular learning-practice situations (instances), might be seen as learning propositions—as invitations to open *learning conversations* (in the Schönean sense of *conversation*).

However, learning does not take place solely within workplace situations. Individual learning journeys involve navigating nomadically through a continuum of multiple different possible learning-practice situations—within the transaction space of the domain of practice. At the foundational learning level, these might include simulated studio-practice situations within a *home* studio space. As learners become more experienced and capable, they are able to tentatively venture out nomadically into the domain of practice as *learner-practitioners*. During this phase they might work collaboratively on live work-world projects with more experienced practitioners (including teachers). This ultimately leads to participating in actual workplace situations—in the form of work placements and internships. However, their nomadic journeys might not necessarily take a linear path from novice to professional practitioner. Rather, they might be better characterized as *rhizomatic* (Cormier, 2008; Deleuze & Guattari, 1987)—moving through multiple unfolding situations in sometimes unexpected directions, towards co-evolving emergent outcomes. Particular learning-practice situations can be understood in terms of *symmathesies*, or *knots*, that are dynamically co-constituted by the participating learners, teachers, practitioners and workplaces. In this way, the boundaries between learners and practitioners, and between learning and work, are dissolved within integrated whole practice situations. As such, learning is continuous with practice. Learners are practitioners and practitioners are learners.

What emerges from the pedagogical inquiry is not a learning *model* that can be applied generally to all situations in a top-down way. Rather, the proposition for a nomadic agile learning approach is an *invitation* to teachers, learners, practitioners and workplaces to participate in co-constituting and co-evolving learning-practice situations, in which they can all contribute and learn together.

Limitations and Further Research

There are a number of limitations and potential issues with both the nomadic agile learning proposition and the research inquiry itself, that require further discussion and inquiry. From the perspective of both Deweyan inquiry and expansive learning, it is only through the testing of propositions in practice that they can be found to work and be stabilized as potential new practices—and even then, only for that context. For Dewey, in particular, there is no such thing as *certain* knowledge—only a situated contingent *knowing* that something worked in that situation. However, the resulting concepts and practices can be used as tools to explore similar problematic situations. Furthermore, for both Deweyan pragmatism and activity theory, as "epistemologies and theories of transformative material action" that share a "commitment to an ontology of change as well as an anthropology of becoming" (Miettinen, 2006, p. 389), the object of all inquiry is to make a practical difference in the world. In this respect, this inquiry into nomadic agile forms of learning falls short. However, implementing a nomadic agile learning approach *instance* in practice—possibly in the form of a pilot programme or *change laboratory*—does provide an opportunity for further research, as a continuation of this inquiry.

In relation to the inquiry as it unfolded, although I generally feel that I had a reasonably good understanding and *sense* of student and teaching perspectives—both through collecting these in my interviews and through my teaching practice—I feel that that the employer perspective was underrepresented. It would have been better to have perhaps talked with a broader range of employers and workplaces, particularly larger employers. Having said that, I have had regular ongoing conversations with a wide range of employers—not only during my time teaching, but also as a practitioner-mentor in workplaces, and as an employer myself. Therefore, my understanding of employer, workplace and practitioner perspectives did have a wider basis than might appear. The perspectives that *were* missing from the inquiry, however, were those of

government agencies and policy makers—for example, the New Zealand Qualifications Authority (NZQA), the Tertiary Education Commission (TEC) and the Ministry of Education—as well as higher-level educational institution management. Although I feel I had a reasonably good understanding in relation to the perspectives of private tertiary establishments (PTEs), my understanding of state sector perspectives—particularly, technical institutes—was limited, in my opinion. As such, part of negotiating a possible nomadic agile pilot programme, as a further research programme, would require more in-depth discussions with these groups.

The inquiry was also necessarily narrow in relation to the domains to which it applied. As it was responding specifically to my own teaching experience, it was limited to creative technology domains, and specifically to the web and interactive design domain. As such, the nomadic agile learning proposition might appear to be quite limited and not necessarily appropriate for other domains. However, that does not mean it might not still be of some value to other domains. The proposition, as a speculative possibility, can serve as an invitation to open conversations between teachers, practitioners and workplaces, to explore problematic situations in other domains. In other words, to use open-source software parlance, it could be *forked* to create a new branch.

In relation to the epistemological discussion in *Part One*, there are some obvious gaps and omissions. I focused mainly on Deweyan pragmatism and enactivism, as *philosophies of nature* that are able to dissolve the metaphorical wall between subject and world, at the level of the individual organism-in-the-world. However, given where the proposition ended up, in emphasizing the sociocultural as primary, I feel the discussion would have benefited from exploring more ecological and anthropological perspectives. These might include, for example, the work of Gregory and Nora Bateson, the ecological psychology of James Gibson (Gibson, 1977 Heras-Escribano, 2019), Humberto Maturana's biology of cognition (Maturana, 1970) and perhaps the anthropological perspective of Lambros Malafouris's Material Engagement Theory (Malafouris, 2013). In this respect, Heras-Escribano's (2019) suggestion that Deweyan pragmatism is able to provide an overarching, post-cognitivist philosophical framework, to bring together enactivism and ecological psychology, offers a fruitful line of future inquiry. This could possibly build on the work of Gallagher (2017) and Ilundáin-Agurruza et al. (2018) (from the enactivist side) and Johnson (2007, 2014), Lakoff & Johnson (1999), Shook (2013), Solymosi & Shook (2013), Solymosi (2016) and

Dreon (2019) (from the pragmatist side). Within the pragmatist stable, there was perhaps too much emphasis on Dewey, while Mead's social psychology (Shalin, 2000; Simpson, 2009) and philosophy of education (Mead, Biesta & Tröhler, 2008) may have been able to contribute a more nuanced understanding of the social emergence of mind, knowing and learning. I deliberately steered clear of poststructuralism (mostly) and critical theory perspectives—apart from a short discussion in relation to Derrida's notion of deconstruction. However, I feel that further discussions between pragmatism and poststructuralism also offer fruitful lines of inquiry—particularly in relation to the propositions of *deconstructive pragmatism* (Biesta, 2013) and *genealogical pragmatism* (Koopman, 2011). In relation to critical theory, the Kantian pragmatism of Jürgen Habermas (Bernstein, 2010) also opens up potential conversations with classical American pragmatism. However, for Bernstein, rather than moving *back* to Kant, we should "move *forward* to a more dynamic, flexible pragmatism in the spirit of Dewey and Mead" (2010, p. 198).

A potential issue for nomadic agile learning is how to accommodate potential differences in epistemological beliefs. In my own teaching experience this has caused tensions with both students and teaching colleagues. It is all very well to conceptually frame agile learning within a pragmatist-enactivist onto-epistemology, but in practice there are real walls to dissolve between people with different worldviews. In soft systems methodology, accommodations are sought between different worldviews in relation to what they can live with. This often requires a shift in beliefs, expectations and attitudes. In relation to the nomadic agile learning proposition, accommodations would need to be negotiated both at the level of participation in the programme (the course), as well as at the level of each learning-practice situation (instance). Even though I may have developed the proposition as a pragmatist-enactivist approach, there is no guarantee that the actual participants will share this view. For Biesta (2013), there is a very real question as to whether Dewey's philosophy "can really facilitate communication across differences or whether it can only facilitate communication among those who share a similar set of assumptions about the world and their place in it" (p. 40). Although this might be considered a problem, ultimately it is not the conceptual underpinning that is being tested in practice, but rather the pedagogical approach. The theoretical underpinning, although informing the pedagogical practice, is evaluated by whether it works as an explanatory account. Differences in pedagogical expectations, however, do need to be resolved within a shared understanding, for the nomadic agile approach to actually function in practice.

As such, this requires open communication between all the participants. The other potential issue is in relation to the responsibility for learning. In particular, how can we get employers to accept joint responsibility for domain-specific learning and ensure their participation in learning-practice situations? Not only might this require a shift in attitudes through open discussion, there is also the financial cost to workplaces that needs to be considered and worked through.

Finally, although I did mention Dewey's theories of democracy, aesthetics and ethics, in passing, I didn't really give them a lot of space. So I will just say a few words on these in closing. For Dewey, democracy is not a political system, as such, but rather is based on his theory of communication—as the open participatory coordination of communal life. On this view, democracy reaches down to every level of social cooperation, with those participating in the life of the community jointly making decisions and coordinating the activities that affect them. Rather than being a top-down system of government in which policies are imposed on communities, Deweyan democracy can be understood as a process of community creation, from the ground up. From this perspective, nomadic agile learning can be characterized as a democratic process that breaks free from top-down education structures, placing the decision-making directly in the hands of those involved. In this way, decisions are made democratically by the teachers, students, practitioners and workplaces that co-constitute both the domain of practice and particular learning-practice situations. In a similar way to George Monbiot's call for the *rewilding* of politics (Monbiot, 2019)—in which communities work together to improve their local community life—the proposition for nomadic agile learning can be seen as an invitation to the *rewilding of education*. A question for further research, then, might be: what type of democratic processes or frameworks might be required to facilitate open participatory communication between the participants?

On Dewey's understanding, aesthetics is not something that is confined to art, but is rather the felt, affective quality that pervades all experience. In other words, all experience has an aesthetic quality. Although I touched on this in relation to the affective dimensions of learning-practice situations, I feel that it is something that is generally overlooked and could be a fruitful line for further inquiry. In my view, education research and theories tend to focus on epistemological and pedagogical questions, and do not sufficiently consider the aesthetics of *lived* learning and education experiences. In interactive design parlance, this might be characterized as

the learner's *user experience*. This potential area of research, in addition to Dewey's aesthetics, could also draw on Richard Shusterman's *pragmatist aesthetics* (Shusterman, 2014), Mark Johnson's *aesthetics of understanding* (Johnson, 2007) and Dimitri Shalin's *pragmatist hermeneutics* (Shalin, 2007). Approaching learning from the perspective of the aesthetics of lived experience also opens up potential conversations with other phenomenological perspectives.

Ethics, for Dewey, does not involve a set of objective rules that can be applied to moral problems. Rather, moral deliberation takes the form of general human inquiry, but applied to ethical problematic situations. Ethical problems and their resolution are always situated. In relation to agile nomadic learning, there are a number of ethical issues that can potentially arise in learning-practice situations—for example, in relation to exploitation of students in work-learning situations. There are also more general ethical issues in relation to broader contexts—such as the role of technology, design and education in the interconnected climate, ecological, economic and social crises that the world is now facing (Klein, 2019; Bendell, 2018; Lumsden, 2018; Monbiot, 2017). For Dewey, moral deliberation is a process of imaginative exploration of different courses of action and their possible consequences (Fesmire, 2015; Johnson, 2014). From this perspective, we need to consider more fully the consequences that nomadic agile learning might have, for both human socioculture and the living planet. However, in order to do this, we need to move beyond our human-orientated perspectives and look at these problems from the perspectives of all the entangled and intertwined parts that co-constitute the living planet. Rather than asking questions about how to design new technologies so that we can maintain our human lifestyles, we need to ask how we can change how we live—including how we educate, design and use technologies—in order to restore and sustain the whole, complex symmathesy of the living planet. How can we design the new worlds and ways of living that will be required? Karen Barad (1996) calls for an *ethics of knowing* that requires us to interrogate epistemological boundaries. By interrogating the boundaries between the human world and the more-than-human world, we can possibly dissolve them into one rewilded world. But that's an invitation to another conversation.

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Appendix A: Background

A Proposal for an Agile Approach to the Teaching and Learning of Creative Technologies

I initially developed *A Proposal for an Agile Approach to the Teaching and Learning of Creative Technologies* (Stevens, 2013) as part of a Bachelor of Creative Technologies (Honours) degree, in response to problems that my colleagues and I had experienced teaching on a diploma of digital media course. The main issues we encountered were the rapidly changing and emergent nature of creative technologies domains, the proliferation of open online learning resources, the wide variance in individual students' capabilities and motivation, and the limitations of traditional classroom delivery methods. In response to these, the agile approach emerged as a flexible, holistic approach that integrated learners, domain practitioners, practical real-world projects and open online resources. As it was developed specifically for a one-year graduate diploma in creative technologies, it should be seen primarily as a response to the specific teaching and learning issues inherent in rapidly changing and fracturing creative technologies domains, that I had experienced personally.

The original digital media diploma was a 40-week level 6 course that focused mainly on web design and development. It was also offered as an 80-week part-time course that ran two evenings per week. I initially taught on the part-time course for three years, from 2008 to 2010, while also working as a web designer and developer in my day job. In 2011, I moved to teaching full-time and also took on the role of course leader for the digital media diploma. While teaching on the course between 2011 and 2013, my colleagues and I experienced a number of issues trying to teach a prescribed curriculum within a fixed timeframe, when the domain was so rapidly changing. Not only was it very difficult for us to personally keep up with all the latest technologies and practices, it was also very difficult to keep the curriculum up to date and relevant. Even within a 40-week course, things taught at the beginning of the course would often be out of date or obsolete by the end of the course. This led us to question the practicality and viability of actually having a prescribed curriculum for technically complex skills that are evolving so quickly. We also experienced

curriculum *bloat,* due to trying to accommodate new emerging specializations and increasing complexity within the same timeframe.

Notwithstanding the problems with keeping the curriculum relevant and current, we found that actually having a one-size-fits-all curriculum with predefined learning outcomes in the first place is highly problematic. It is premised on an assumption that the entire class of students are somehow able to learn the same *delivered* content—at the same rate and in the same way—and achieve the same learning outcomes. In my teaching experience, I invariably found there was a wide variance in students' actual learning and understanding, within any particular class group. Rather than uniformly moving towards, and achieving, the same prescribed learning outcomes, students tended to learn in their own way, direction and time. Not only did they start with varying levels of prior understanding and skills, they also all had their own unique sets of motivations, interests, aptitudes, world views and cultural backgrounds. All of these factors influence what, how and when they learn. Students are also part of multiple, intertwined life situations that influence their emotional states and attentional focus. This consequently led to questions about how it might be possible to create more individualized and flexible learning experiences for individual learners.

The proliferation of openly accessible online information, tutorials and resources means that learning is not restricted in time and place, but can potentially happen anywhere and anytime. Open shared learning resources and knowledge production potentially undermines and disrupts the privileged position of educational institutions as the producers, providers and gatekeepers of expert knowledge (Peters & Roberts, 2011; Cormier, 2008, 2011). However, open online resources can also be problematic. They are often unstructured, difficult to navigate and evaluate, and the sheer volume can be overwhelming—especially for novice learners. In addition, learning solely in an online, self-directed way can be potentially socially isolating and demotivating. This led to questions not only about the role and relevance of traditional learning courses and qualifications within traditional educational institutions, but also how these open online resources can be more easily navigated, assessed and integrated into formal learning courses.

Even though our pedagogical approach within the original digital media diploma course was primarily *project-based*, there was still a certain amount of passive delivery in the form of short lectures and slide presentations, as well as more

interactive worked examples, or demonstrations. Although worked examples might be considered to be interactive and participatory—in that the students are able to follow along and try it out for themselves— they often involve copying what the tutor is doing, without necessarily thinking about or understanding it. Furthermore, the actual learning value of the worked example, for individual students, depends a great deal on their prior understanding, their aptitude and attentional focus at that particular time. Consequently, there is usually a wide variance in the students' ability to follow along, which causes practical problems for both the teacher and the class group as a whole. In primarily hands-on creative technology domains, although students do need to learn through their own experience of doing, showing and explaining still have their place—especially when introducing novices to a new domain, topic or technology. This subsequently led to questions about the role and relevance of the teacher, as well as the relevance of specific classroom methods, in relation to an individualized flexible learning approach.

Taken together, these issues—the rapidly changing, emergent nature of creative technology domains, the wide variance in learners, the inflexibility of the one-size-fits-all prescribed curriculum, the proliferation of open online resources and the limitations of traditional classroom delivery methods—constituted the problematic situation as I initially understood it at the time (in 2013). The rapidly changing nature of creative technology domains led to questions about the practicality and viability of prescribed curricula. This in turn led to questions about where exactly current domain knowledge and practices actually reside, particularly in practical vocational domains. Following Cormier (2008), I suggested that rather than necessarily being in the curriculum or the subject-expert teacher, domain knowledge and practices reside within the wider community of domain practitioners—emerging from their interactions with each other and with their tools and materials. Following this line of thought, I introduced the concept of the *domain of practice,* as a way of broadening the notion of a *community of practice* (Lave & Wenger, 1991) to include *all* practitioners within a particular domain (see *Figure 20* below). Within the domain of practice, domain knowledge and practices dynamically emerge from the many and varied interactions of the domain practitioners. As such, rather than subject-expert teachers developing, maintaining and delivering a prescribed curriculum, it might be better for teachers to introduce and connect learners directly to the domain of practice, in which they can learn through direct participation. However, formal learning courses and teachers still have roles to play. Courses provide frameworks and social support for learning. As more

experienced practitioners, teachers are able to act as both guides and collaborators. From this perspective, both teachers and students—along with professional practitioners—can all be seen as practitioners within the domain of practice, merely with different levels of experience. This also means that students are not just learning through being part of the domain of practice, but they are also actively contributing to it. In a similar way, teachers are also potential learners and contributors, while professional practitioners are also potentially learners and teachers.
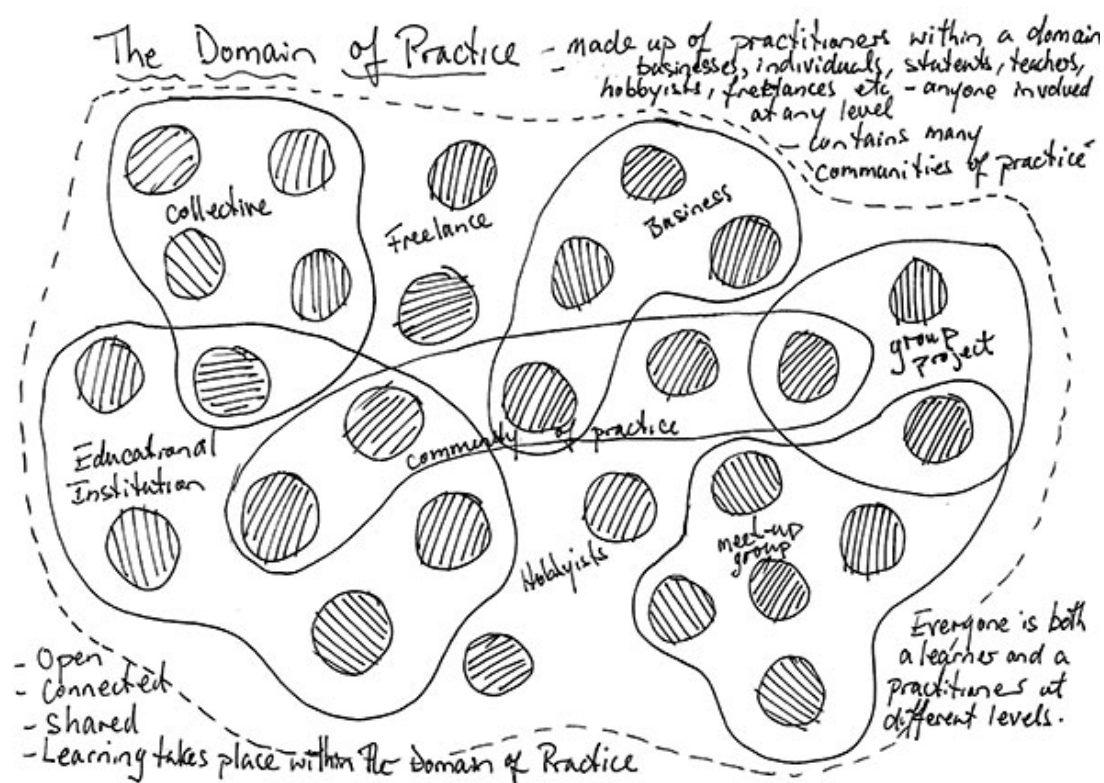
Figure 20: The *domain of practice* which includes all practitioners and their individual and collective practices within a particular domain.

The proliferation of openly accessible online resources led to questions about the role and relevance of universities and schools. It also led to questions about how open resources might be leveraged and integrated into formal learning courses—as a way of connecting learners to the domain of practice. Although it might be possible for some people to learn solely through online resources in a completely self-directed way (Stephens, 2013), it can be difficult—especially for novice learners—to navigate around and evaluate the massive amount of information. It can also be potentially socially isolating and demotivating. Formal courses are able provide context and guidance—especially for those new to a domain or specialization—as well as provide a socially supportive learning environment and culture. As such, a better approach

might be to integrate open online resources into the formal course as a way of enabling a more individualized self-directed and self-determined approach. Informed by both *heutagogy* (Hase, 2007)—which contends that humans naturally learn in a non-linear way, with multiple random entry points—and the *enactivist* view that cognition emerges from the dynamical interaction between human subjects and their physical and social environment (Niessen et al., 2008), I proposed that learning might be best understood as emerging from the learner's multiple and various interactions with any number of different sources, resources, people and activities. From this perspective, the cohort of learners within a formal learning course can be thought of as a network of interconnecting human and non-human nodes. Human nodes include teachers, students and practitioners, while non-human nodes include resources and projects. In this way, each individual learner can be thought of as being at the center of their own learning network (see *Figure 21* below).
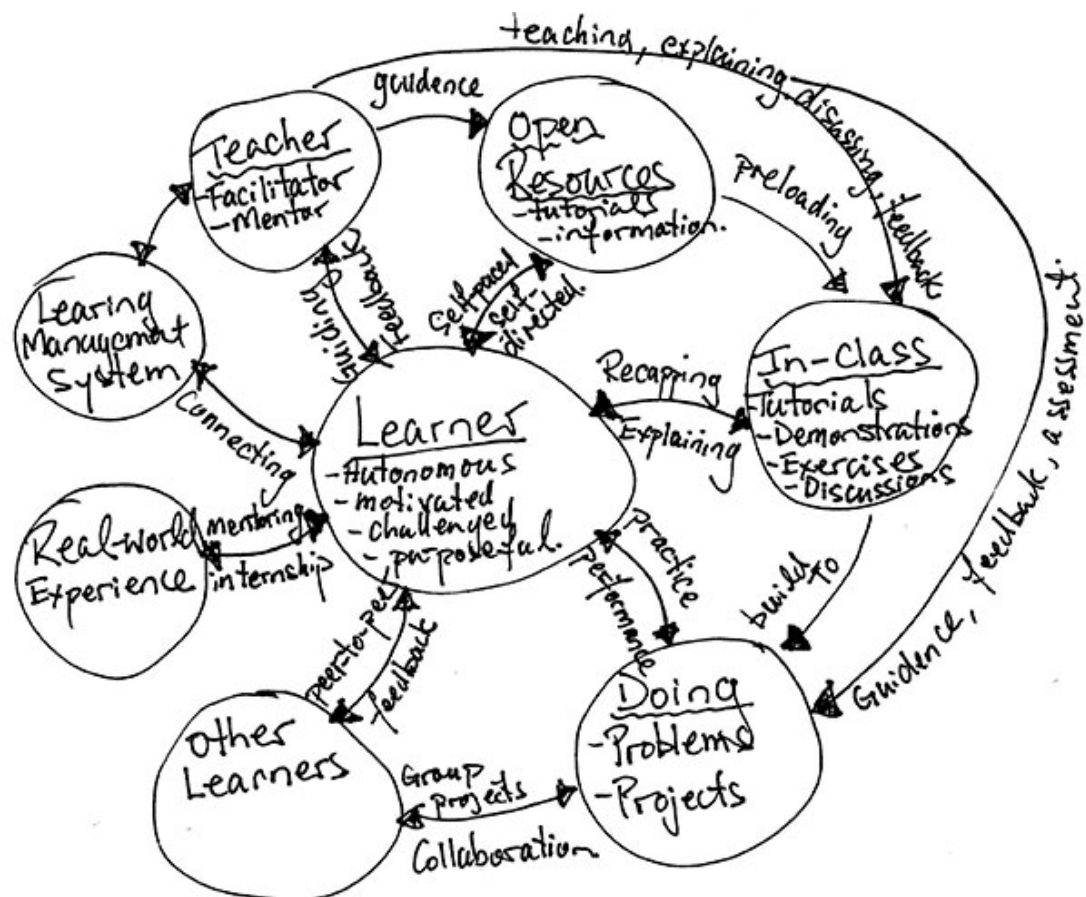

Figure 21: Diagram of the agile learner, conceived as an autonomous motivated proactive agent at the center of their own learning network.

The variances in individual learners' prior understandings, motivations, aptitudes, etc., led to the question of how we might leverage open connecting technologies in order to provide more individualized and flexible curricula. However, although an open, flexible curriculum may address the problem of rapidly changing domain knowledge and practices, it creates other issues, in relation to what specifically is learned and how this is determined. Informed by andragogical and heutagogical approaches (Hase, 2007, 2013; Blaschke, 2012), *what* and *how* it is learned really depends on the individual learner. Having their own learning goals, the learner determines their overall direction, but negotiates their individualized curriculum and learning path with their teacher-guide. As such, the flexible individualized curricula not only take into consideration the student's individual learning goals—but also the way and pace they learn, their motivations, prior understanding and skills, aptitudes, interests, worldview and expectations etc. Following Cormier (2008, 2011), the formal learning course, then, provides the context and framework for the individual curricula, with the teacher guiding the student along their learning path. The relative levels of teacher guidance and self-determinacy depend on the learner's prior knowledge and experience. Although the students are ultimately responsible for their own learning, teacher-determined curriculum still has its place, especially for introducing students to new topics, tools and languages—but as an integrated part of the *pedagogy-andragogy-heutagogy* continuum.

Informed by *agile software development* (Beck et al., 2001) and *learning by wholes* (Perkins, 2009), rather than thinking of the learning paths as necessarily being linear, I conceived them as a series of iterative whole learning cycles. In this way, the learning path might be characterized as a spiral, or series of hermeneutic circles (Bargiela-Chiappini, 2010). As such, rather than sequentially learning about the separate parts out of context and then integrating them at the end—the whole is initially considered in a simple way, broken into parts and then reintegrated to give a greater understanding of the whole. This process iterates through successively more complex wholes—going more deeply into the parts in each iteration. It also allows students to change their learning direction in an agile way in response to both internal and external situations that they might encounter. For Perkins (2009), an essential part of learning by wholes is *learning for understanding,* whereby learners think and act flexibly with what they know in unfamiliar situations, rather than simply rehearse information. The agile software development approach is a similar, flexible iterative

approach that also values "[r]esponding to change over following a plan" and "[i]ndividuals and interactions over processes and tools" (Beck et al., 2001).

The figure contains handwritten labels: "The learner's Successive whole understandings are constructed by the learner with each iteration & are fluid & dynamic", "Dynamic fluid knowledge in the Domain of Practice", "Initial whole understanding", "Prior knowledge & understanding + Learning goals", "leads to:", "The Learning Map - a flexible curriculum that grows organically", "Informs", "Tutor/mentor guides & mentors", "The parts learned are informed by the connection to:", "The parts are contextualised & purposeful and are sub-wholes that are also iterated through", "Learning by doing", "connected to: Collaborative learning", "Other Learners"
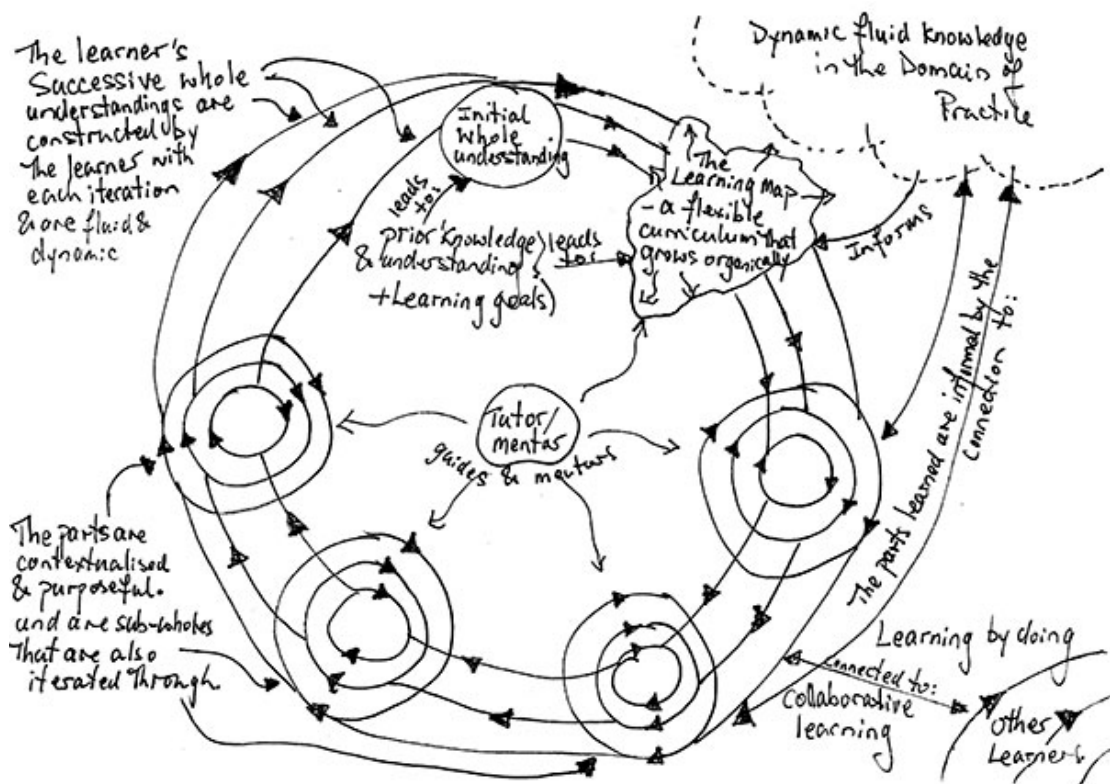
Figure 22: The original agile leaning proposal was conceived as a complex system of multiple iterative overlapping and nested hermeneutic circles in which the parts are contextualized within the whole.

To summarize my original agile approach, then, I used the term *agile* to characterize both the course framework and the range of teaching and learning approaches. I proposed that all of these needed to be flexible and iterative, in order to respond quickly and easily to both the variances in individual student learning, and the rapidly changing domain of practice. However, not only do the framework and the approach need to be agile but the learners themselves, and what they learn, also need to be agile—embracing open resources and emerging technologies, and continually changing with them. Although agile learning favours active learning approaches, in which learners develop their own knowledge and skills through active doing, it is not based on a conventional constructivist view of knowledge as internal structures. Rather, influenced by *enactivism* (Niessen et al., 2008) and *rhizomatic learning* (Cormier, 2008, 2011), it takes a more dynamic or fluid view of *knowing*. Informed by *agile software development* (Beck et al., 2001) and *learning by wholes* (Perkins, 2009),

agile learning is a holistic iterative approach in which novice learners are initially introduced to the domain of practice in a simple whole way, and then iterate through progressively more complex production and learning cycles. As learners become more competent and capable practitioners, the learning approach progresses along the *pedagogy-andragogy-heutagogy* continuum. Ultimately, however, it is the learners themselves who are responsible for determining and working towards their own learning objectives.
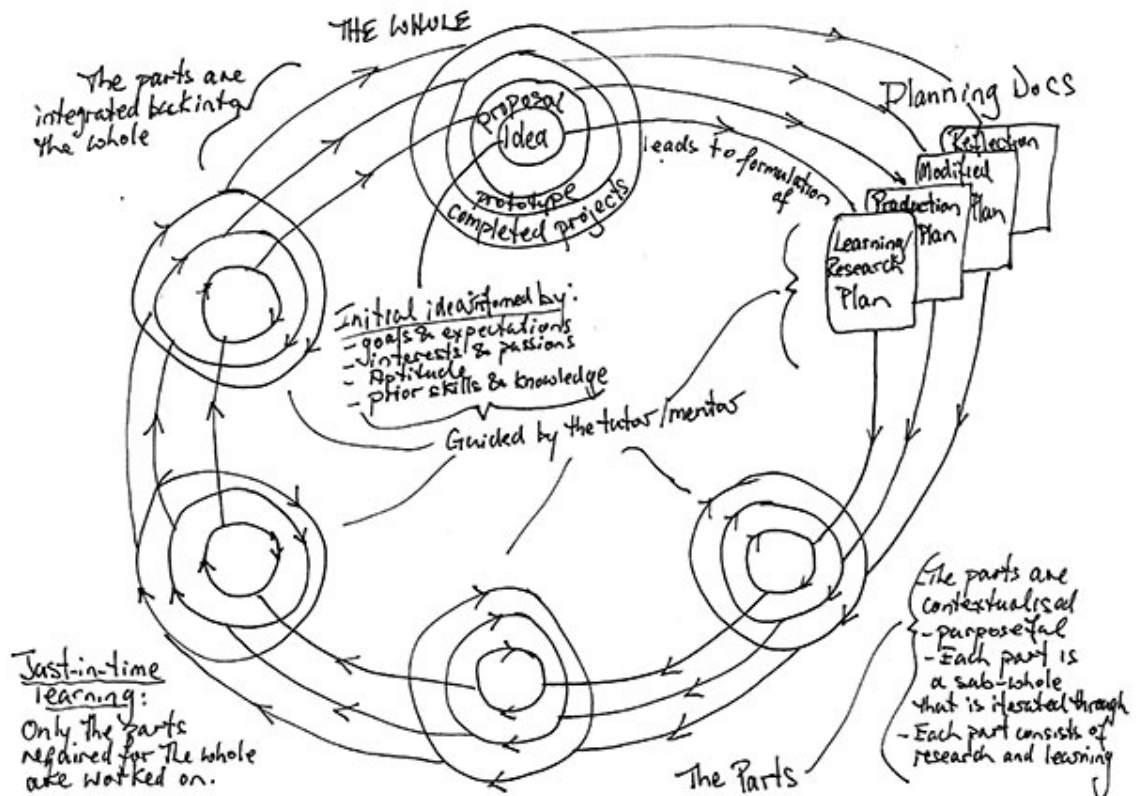
Figure 23: The agile learning model as applied to the Graduate Diploma of Creative Technologies course, showing iterative development of learning plans, projects and just-in-time learning in relation to projects being worked on.

Although the agile approach was initially developed in response to the issues encountered teaching on a relatively structured level 6 diploma course, it was primarily designed to be applied in a new less-structured level 7 graduate diploma course in creative technologies (GDCT). The GDCT not only included a web and interactive design stream, but also graphic design, visual effects and 3D animation streams. In order to accommodate the different streams, the approach needed to be even more general and flexible than I had originally anticipated. In other words, the agile approach itself needed to be *agile* in its application across different creative

technology domains. Although the agile approach was implemented in various forms across all four streams of the GDCT, it is my own experience coordinating and teaching the web and interactive design stream, from 2014 to 2016, and the problems that I encountered, that form the starting point of this inquiry.

Appendix B: Ethics Approval

a) Conditional Approval Letter

AUTEC Secretariat

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31 October 2016

Ricardo Sosa
Faculty of Design and Creative Technologies

Dear Ricardo

Ethics Application: **16/409 Dissolving the walls: A practice-led inquiry into open and connected learning of web design and development**

Thank you for submitting your application for ethical review. I am pleased to advise that a subcommittee of the Auckland University of Technology Ethics Committee (AUTEC) approved your ethics application subject to the following conditions:

1. Clarification of whether other employees at the Media Design School are being approached to participate in this research, and if so, how the potential conflict of interest is being managed;
2. Amendment of the recruitment email so that the recipient is referred to the attached Information Sheet, rather than have to contact the researcher to ask for it;
3. Amendment to the information Sheet to include advice of the researcher's role in the Media Design School.

Please provide me with a response to the points raised in these conditions, indicating either how you have satisfied these points or proposing an alternative approach. AUTEC also requires copies of any altered documents, such as Information Sheets, surveys etc. You are not required to resubmit the application form again. Any changes to responses in the form required by the committee in their conditions may be included in a supporting memorandum.

Please note that the Committee is always willing to discuss with applicants the points that have been made. There may be information that has not been made available to the Committee, or aspects of the research may not have been fully understood.

Once your response is received and confirmed as satisfying the Committee's points, you will be notified of the full approval of your ethics application. Full approval is not effective until all the conditions have been met. Data collection may not commence until full approval has been confirmed. If these conditions are not met within six months, your application may be closed and a new application will be required if you wish to continue with this research.

To enable us to provide you with efficient service, we ask that you use the application number and study title in all correspondence with us. If you have any enquiries about this application, or anything else, please do contact us at ethics@aut.ac.nz.

I look forward to hearing from you,

Yours sincerely

Kate O'Connor
Executive Secretary
Auckland University of Technology Ethics Committee

Cc: matsteve@ihug.co.nz; Andrew Gibbons; Jennie Swann

b) Final Approval Letter

AUTEC Secretariat

Auckland University of Technology
D-88, WU406 Level 4 WU Building City Campus
T: +64 9 921 9999 ext. 8316
E: ethics@aut.ac.nz
www.aut.ac.nz/researchethics

7 December 2016

Ricardo Sosa
Faculty of Design and Creative Technologies

Dear Ricardo

Re Ethics Application: **16/409 Dissolving the walls: A practice-led inquiry into open and connected learning of web design and development**

Thank you for providing evidence as requested, which satisfies the points raised by the Auckland University of Technology Ethics Committee (AUTEC).

Your ethics application has been approved for three years until 7 December 2019.

As part of the ethics approval process, you are required to submit the following to AUTEC:

- A brief annual progress report using form EA2, which is available online through http://www.aut.ac.nz/researchethics. When necessary this form may also be used to request an extension of the approval at least one month prior to its expiry on 7 December 2019;

- A brief report on the status of the project using form EA3, which is available online through http://www.aut.ac.nz/researchethics. This report is to be submitted either when the approval expires on 7 December 2019 or on completion of the project.

It is a condition of approval that AUTEC is notified of any adverse events or if the research does not commence. AUTEC approval needs to be sought for any alteration to the research, including any alteration of or addition to any documents that are provided to participants. You are responsible for ensuring that research undertaken under this approval occurs within the parameters outlined in the approved application.

AUTEC grants ethical approval only. If you require management approval from an institution or organisation for your research, then you will need to obtain this.

To enable us to provide you with efficient service, please use the application number and study title in all correspondence with us. If you have any enquiries about this application, or anything else, please do contact us at ethics@aut.ac.nz.

All the very best with your research,

Kate O'Connor
Executive Secretary
Auckland University of Technology Ethics Committee

Cc: matsteve@ihug.co.nz; Andrew Gibbons; Jennie Swann

Appendix C: Tools

a) Email Invitation Templates

Initial Participant Contact Emails

There are two versions of the initial contact email. The first one will be used for contacting potential participants form my personal and professional network who I already know and the second for those who I have not previously met. There may also be some minor variations within each of these categories, depending on the individual person being contacted.

Email One

Hi *Potential Participant,*

As part of my PhD research at AUT CoLab into open and connected learning of web design and development, I am holding a series of discussions with relevant people and was wondering if you would be interested in taking part.

It would involve between one and three discussions of between sixty and ninety minutes each for the purpose of gaining your perspective on the current situation and possible ways of improving it. The discussions will be private and confidential, and you can withdraw at anytime.

If you are interested, please read through the attached information sheet and let me know if you would like to participate, or have any further questions. We can then arrange suitable times to meet. As an official research project I will also ask you to sign a consent form.

I look forward to hearing from you.

Regards,

Matt

Email Two

Dear *Potential Participant,*

My name is Matthew Stevens. I am a PhD student at CoLab, AUT University, and as part of my PhD research into open and connected learning of web design and development, I am holding a series of discussions with relevant people and was wondering if you would be interested in taking part.

It would involve between one and three discussions of between sixty and ninety minutes each for the purpose of gaining your perspective on the current situation, as well as possible ways of improving it. The discussions will be private and confidential, and you can withdraw at anytime.

If you are interested in being involved, please read through the attached information sheet and let me know if you would be willing to participate, or have any further questions. We can then arrange suitable times to meet. As an official research project you will also need to sign a consent form, which I will send you in advance of the meetings.

Thank you for your time and consideration, and I look forward to your reply.

Best Regards,

Matthew Stevens

b) Participant Information Sheet

Participant Information Sheet

Date Information Sheet Produced:

20 Nov 2016

Project Title

Dissolving the Walls: An Inquiry into a Nomadic Agile Approach to Learning Web Design and Development

An Invitation

My name is Matthew Stevens. I am a PhD student at CoLab, AUT University, as well as a lecturer at Media Design School. My research project, "Dissolving the Walls: An Inquiry into a Nomadic Agile Approach to Learning Web Design and Development", is an inquiry into the feasibility of a nomadic agile approach to the teaching and learning of web design and development outside the constraints of traditional educational institutions and qualifications.

In the first stage of the research, I will be holding discussions, in the form of semi-structured interviews, with relevant people in order to collect information and different perspectives about the current situation and possible ways of improving it. The outcome of this first stage will be a proposal for action to take to improve the situation, which will be implemented in practice in the second stage as a pilot programme.

As a relevant person, I am inviting you to participate in two to three discussion sessions that will take between sixty and ninety minutes each.

What is the purpose of this research?

The purpose of this research is to explore the feasibility and effectiveness of alternative ways of learning to become a web practitioner, outside the constraints of traditional educational institutions and existing qualification frameworks. The research is in response to issues I have encountered using an "agile" teaching and learning approach within an existing educational institution and qualification. Potentially, the research will have significance for students (wanting to become practitioners), teachers and employers within the web industries, as well as educational institutions.

Rather than being solely academic, this research project is a practice-led inquiry that seeks to make a positive difference in the real world. As such, the findings from this first part of the research will form the basis of a proposal that will be implemented in practice in the second part. As an "open" research project, the findings will be published on a research blog, as well as possibly in academic journals; books; and presented as conferences papers. Ultimately, the research will contribute to my final PhD thesis.

How was I identified and why am I being invited to participate in this research?

I have identified you as a potential participant in this research because you represent one of the relevant groups affected by, or involved in, the teaching and learning of web design and development. These relevant groups are: past students (alumni) currently working as web practitioners, teachers and employers within the web domain, as well as educational institution managers/leaders and government educational agency representatives. Your contact details were obtained from my existing personal and professional networks.

How do I agree to participate in this research?

If you are willing to take part in this research, please let me know by return email and we can work out a suitable time(s) to carry out the discussion sessions. You will also need to fill out and sign a consent form indicating that you are providing informed consent. I will send the consent form to you in advance, once for have agreed to participate, and you can bring it with to the discussion. You will be given a signed copy to keep for your records.

Your participation in this research is voluntary (it is your choice) and whether or not you choose to participate will neither advantage nor disadvantage you. You are able to withdraw from the study at any time. If you choose to withdraw from the study, then you will be offered the choice between having any data that is identifiable as

belonging to you removed or allowing it to continue to be used. However, once the findings have been produced, removal of your data may not be possible.

What will happen in this research?

I am asking you to contribute between sixty and ninety minutes of your time for between one to three discussion (interview) sessions about the current state of teaching and learning of web design and development, identifying issues and possible improvements, from your perspective. As a starting point in the first discussion, I will initially outline how I perceive the situation and present a tentative proposal for a "nomadic agile" learning approach as a way of improving it from my perspective as a teacher. During the discussions, I will be taking notes and drawing diagrams, which will then be developed into models (drawn diagrams) that represent your perspective. These models, along with models of other participant perspectives, will then be presented back to you in subsequent discussions to get your feedback.

The discussions will not be recorded or filmed, and you will have access to all the notes and drawings collected from your discussions, as well as access to the models and the final proposal for action to take to improve the situation.

What are the discomforts and risks?

As the discussions are mainly informal or semi-formal, are not of a personal nature, and will be private and confidential, I don't anticipate any significant discomfort or risk.

How will these discomforts and risks be alleviated?

However, if for any reason you do feel uncomfortable at anytime during the discussions then they will be terminated and all notes and drawings from your discussions will be destroyed.

What are the benefits?

This research has potential benefits for you and the other participant groups. For learners, it may potentially provide more efficient, effective and flexible ways of becoming a web practitioner; for teachers, it can inform and improve existing teaching practices; and for employers, it potentially offers ways of increasing the pool of skilled, knowledgeable and productive employees. For educational institutions and government agencies, it offers an opportunity to re-evaluate the effectiveness and relevance of traditional practices and structures in an open and connected world.

For me, the research potentially offers ways of improving my own teaching practice, as well as obtaining a PhD qualification.

How will my privacy be protected?

All the discussions will be private and confidential. In the case that individual discussions are referenced in any blog posts, publications, presentations; a pseudonym will be used.

Please remember that your participation is purely voluntary. You may withdraw completely up until the end of the discussion stage, in which case all notes and drawings from your discussions will be destroyed.

Any personal information will be kept highly confidential. Information collected will be stored in a locked cabinet and/or secure hard drive and will be destroyed after 6 years.

What are the costs of participating in this research?

The cost to you is your time. Each discussion will take between sixty and ninety minutes and there will be between one and three discussions with each participant.

What opportunity do I have to consider this invitation?

You have two weeks (14 days) to consider this invitation. You may contact me to accept, decline, or ask any questions during that time. After two weeks I will contact you to see if you are interested in participating.

Will I receive feedback on the results of this research?

In addition to follow up discussions in which models developed from previous discussions will be presented back to you, the final proposal for action to take to improve the situation will be sent to you.

What do I do if I have concerns about this research?

Any concerns regarding the nature of this project should be notified in the first instance to the Project Supervisor (see contact details below).

Concerns regarding the conduct of the research should be notified to the Executive Secretary of AUTEC, Kate O'Connor, *ethics@aut.ac.nz*, + 64 9 921 9999 ext. 6038.

Whom do I contact for further information about this research?

Please keep this Information Sheet and a copy of the Consent Form for your future reference. You are also able to contact the research team as follows:

Researcher Contact Details:

Matthew Stevens, matsteve@ihug.co.nz, 021 379 242

Project Supervisor Contact Details:

Primary Supervisor: Dr Ricardo Sosa, rsosa@aut.ac.nz, +64 9 921 9999 ext. 7947

Secondary Supervisor: Dr Jennie Swann, jennie.swann@aut.ac.nz, +64 9 921 9999 ext. 8361

Mentor Supervisor: Dr Andrew Gibbons, andrew.gibbons@aut.ac.nz, +64 9 921 9999 ext. 7929

Approved by the Auckland University of Technology Ethics Committee on 7th Dec 2016, AUTEC Reference number 16/409.

c) Participant Consent Form

Consent Form

Project title:	**Dissolving the Walls: An Inquiry into a Nomadic Agile Approach to Learning Web Design and Development**
Project Supervisor:	**Dr Ricardo Sosa**
Researcher:	**Matthew Stevens**

○ I have read and understood the information provided about this research project in the Information Sheet dated 20 Nov 2016.

○ I have had an opportunity to ask questions and to have them answered.

○ I understand that notes will be taken and drawings (diagrams) made during the interviews.

○ I understand that taking part in this study is voluntary (my choice) and that I may withdraw from the study at any time without being disadvantaged in any way.

○ I understand that if I withdraw from the study then I will be offered the choice between having any data that is identifiable as belonging to me removed or allowing it to continue to be used. However, once the findings have been produced, removal of my data may not be possible.

○ I agree to take part in this research.

○ I wish to receive a summary of the research findings (please tick one): Yes○   No○

Participant's signature: ………………………………………………………………………………………………………

Participant's name: ………………………………………………………………………………………………………

Participant's Contact Details (if appropriate):

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Date:

Approved by the Auckland University of Technology Ethics Committee on Dec 7, 2016 AUTEC Reference number 16/409.

Note: The Participant should retain a copy of this form

d) Indicative Interview Questions

Indicative Questions for Semi-structured Interviews

Interview Format and Purpose

The semi-structured interviews will take the form of one-on-one discussions between the researcher, Matthew Stevens, and individual participants. The interviews will be private and confidential, and participants will be required to sign a consent form before the discussions begin. Participation in the interviews is voluntary and participants can withdraw at anytime prior to the completion of the discussion stage of the research. Each interview will be between sixty and ninety minutes and there will be up to three interviews with each participant. The will be no video or audio recording of the interviews but there will be note taking and diagram drawing by the researcher as a way of representing the perspectives expressed.

Following soft systems methodology, the purpose of the interviews is to collect information and perspectives about the situation, as well as possible ways of improving it, from different relevant perspectives. As a starting point, and as a way of structuring the discussions, the researcher will present his perspective of the problematical situation, as well as his tentative model for a "nomadic agile" approach as a way of improving it. During the discussions, notes will be taken and diagrams drawn to represent the participant's perspective. After the initial round of discussions, the researcher will develop models, also in the form of drawn diagrams, that will be presented back to the participants in further interviews for feedback and discussion. At the conclusion of the discussion process, a proposal will be developed for action to take to improve the situation, taking into consideration all the different perspectives.

Indicative Questions

To a large extent, the interviews will be an open dialogue with questions and discussion arising initially from, and in response to, the perspective and models presented by the researcher. The types of questions will also vary for each of the relevant participant groups. Possible questions for each group might be:

A. Past web design/development students (alumni):
- From your perspective, what were the main issues learning web design and development as a novice in the context a formal course?
- How do you think your course prepared for working as a web practitioner?
- What was your experience transitioning from learning to working?
- How do you keep up-to-date with the latest technologies and practices?
- Is this an issue you?
- Does your employer give you time to research, learn and develop new skills and technologies?
- How long did it take you from starting work to become a productive employee?
- Did you receive mentoring from more experienced team members when you first started work?

B. Web design and development teachers:

- From your perspective, what are the main issues teaching web design and development in the context a formal course?
- What is your teaching and learning philosophy/approach?
- How do you assess student learning?
- Do you think assessment is important?
- What is your view of component descriptors and learning outcomes?
- How do you keep up to with the latest technologies and practices?
- Is this an issue you?
- Does your institute allocate time for you to research, learn and develop new skills and technologies?
- How do you determine what to teach (i.e. the curriculum)?
- How do you keep the curriculum up to date?

C. Web industry employers:

- What type of things do you look for when employing web designers and developers?
- From your perspective, what do you see as the major issues with employing graduates?
- How does your company and employees keep up with the latest technologies and practices?
- Is this an issue you?
- Do you allocate time for your employees to research, learn and develop new skills and technologies?
- What is your view on internships?
- Would you be interested in taking a more active role in the learning of novices wanting to become professional web practitioners?

D. Educational institution programme leaders:

- From your perspective, what do you see as the major issues delivering degree and diploma programs within the context of your institution?
- What is your teaching and learning philosophy?
- What are your views on assessment?
- What is your view of component descriptors and learning outcomes?
- Are these consistent with the views and policies of your institution?
- Does your institute allocate time for your teachers to research, learn and develop new skills and technologies?
- Who determines the curriculum and how do you keep it up to date and relevant?

Example of a Model (used to structure discussions and ask questions)

Below is a rough example of a model (drawing) for a "nomadic agile" learning approach that might be used to structure discussions and ask questions of the situation with.