COLIN BEARD & KAISU MÄLKKI

1. STUDENT TRANSFORMATION AND THE INTERACTION BETWEEN THE EPISTEMOLOGICAL AND ONTOLOGICAL TRACKS: THE WIDER PROJECT OF HIGHER EDUCATION?

INTRODUCTION

Higher education has long been seen as the heart of knowledge and epistemological development. However, recent advances in the sphere of research on learning challenge higher education to take a broader and more integrative perspective, so that the ontological self of the student can be "brought into view and engaged with" (Barnett 2007, 9). Furthermore, Blackie et al. (2010, 641) suggest that "if we are to take the idea of the person of the student (transformation) seriously, we need to begin to pay attention to the emotional side of education."

In this chapter we thus pay attention to student emotions and bring out and engage with the possibilities of transformation in the context of higher education. We first explore the historical landscape of learning by presenting a brief outline of evolving views of human learning. We verify the increased understanding of integration and complexity. The paper then focuses on the problematic relationship between affect and reason: we suggest that interaction with knowledge *per se* can generate ambivalence, and so we suggest that at the edge of knowing lies a difficult emotional territory, where the interaction between the epistemological and the ontological self presents opportunities for transformation while involving challenges that need to be acknowledged. The paper also offers a practical case study for integrating theory with practice and for illustrating the role of emotions in perspective change and transformation.

Thus, this chapter approaches the theme of interaction in education by exploring, from a theoretical perspective, the challenges of student interaction with knowledge within the epistemological track of higher education. We propose that a more fruitful way to address and work with these challenges will come about by recognizing and considering both the epistemological and the ontological tracks of higher education, especially the interaction between those two tracks.

TOWARD INTEGRATIVE VIEWS OF LEARNING

Theorizing about how adults learn has long been subject to the constant criticism associated with notions of "deficit," which focuses on missing elements within

the prevailing hegemony. By presenting a brief quasi-evolutionary outline of the unremitting quest for more "complete" ideas about how humans learn, we allow increased interaction to become visible.

By the early twentieth century, behaviorism had emerged as a dominant view linked to, and associated with, a western approach and operant conditioning (Pavlov 1927; Skinner 1974). The animalistic focus gradually shifted to cognitivist theories, which began to surface in the late 1950s. Major contributors included Lewin (1951) and Gagne (1974), but perhaps the most well known was Bloom (1956), who developed a spatial hierarchy of cognition (higher/lower forms). Seeing the "human" as unique, intelligent, and rational, the cognitive focus alluded to the computational processing of thinking, remembering, analyzing, and seeking ways to explain and make sense of the world.

By the late 1960s, humanist theories were emphasizing personal agency and the fulfillment of potential. Perhaps the best-known proponent was Carl Rogers (1969), whose seminal text, *Freedom to Learn*, expressed a liberating metaphor. For Rogers, feelings, warmth, acceptance, and the nurturing of people were central to learning: individuals, if treated in the right way, had it within them to work towards solutions to problems. Significantly, these ideas from the sixties were instrumental in the development of contemporary learner-centered methods: they are not inventions of the twenty-first century.

Cultural and social context became increasingly recognized as important (e.g., Vygotsky 1978), giving rise to a range of social constructivist theories, with learning seen as active and contextualized. Learners were seen not only to be constructing knowledge for themselves, as individuals, but also to be constructing knowledge through social interaction. While social constructivist theories remained influential, they were now positioned among a multitude of views on human learning; examples are psychoanalytic theories that unearth the role of hidden desires and fears (Britzman 1998); the questioning of a monolithic notion of a single intelligence (Gardner 1983); advances in neuroscience leading to a reassessment of biological determinism (Damasio 1995); and a widening recognition of embodiment in learning (Lakoff & Johnson 1999; Sheets-Johnstone 2009). Many others have contributed to cognitive science, particularly in relation to constitutional rather than causal understandings of embodied and environmentally-embedded cognition (Shapiro 2011). The role of the senses (for an overview, see Abram 1997), and specifically the role of bodily gestures (Gallagher 2005) and the emotions (Illeris 2002; Mälkki 2010; Ketonen & Lonka 2013), are all receiving renewed attention in the search for new meaning about how humans learn.

Although far from presenting a complete picture, this historical sketch charts a trajectory from ethology to ecology. Knowledge about human learning thus shifts from animalistic simplicity, rooted in behavioral observation, predictability, and control, which dominated early understanding about human learning and teaching, to the increased awareness that human learning is complex. While raising new

methodological challenges (e.g., Mälkki 2011), the move away from "filling gaps" to exploring multiple elements of human learning can be described or interpreted using *ecological* metaphors (Sterling 2001; 2003). Davis and Sumara (1997, 111) apply just such metaphors and offer defining parameters. They suggest that all the contributing factors in any learning situation are "intricately, ecologically, and complexly related. Both the cognizing agent and everything with which it is associated are in constant flux, each adapting to the other in the same way that the environment evolves simultaneously with the species that inhabit it." Thus, the current state of research may in effect be characterized as a striving towards integrative explorations of human learning (see Dillon 2007), i.e., an increased awareness of interaction between those dimensions of learning that previously may have been considered separately.

THE CHALLENGES OF INTEGRATION WITHIN HIGHER EDUCATION

Within higher education, the efforts to achieve integrative thinking regarding such a complex issue as human learning may be seen as being hindered by conventional dualistic thinking, which has far-reaching consequences for our understanding of learning today. These consequences are visible, for example, in the splitting and privileging of the rational over the affective in learning (Boler 1999), which appears to prevail in our understanding of the general project of higher education. In a similar vein, emotions have long been regarded as problematic in education, as "inappropriate territory": Tennant comments that "this is difficult to understand, especially given the importance that adult educators attach to the emotional climate of the classroom and the anxieties, fears and hopes of learners" (1997, 22). Mortiboys (2002) makes the case for developing emotionally intelligent lecturers, noting that while it would be disturbing if universities were emotion-free zones, "curiously, so much of the culture in higher education implies that they are" (2002, 7).

In the spirit of illuminating this neglected aspect of higher education, recent research has identified a wide range of emotions experienced by students involved in higher education learning (Pekrun et al. 2002; Beard 2005; Beard et al. 2007; Crossman 2007; Young 2000; Rowe 2013; Ketonen & Lonka 2013; Linnenbrink-Garcia & Pekrun 2011). Nevertheless, the oppositional relationship of affect and reason limits integrative thinking about the learning experience. Feminist writers such as Boler (1999) have expounded on this issue by problematizing the splitting and privileging of the rational over the affective. Despite the central underpinnings of emotions in outdoor education programs in the early 1900s, and the broader influence on emotionality in learning and teaching by educational thinkers (Bloom et al. 1964; Habermas 1988; Knowles 1980, and, more recently, Boud & Miller 1996), the practicalities of emotions in learning and teaching receives little or no attention in contemporary higher education texts that are popular and widely used in lecturer development (e.g., Light & Cox 2001; Ramsden 2003; Biggs 2003).

THE INTERACTION BETWEEN THE EPISTEMOLOGICAL AND THE ONTOLOGICAL TRACKS

The emphasis on the epistemological track in discussions about higher education may also be seen in the frequent references to academic skills such as critical thinking and reflective expertise. Or, along similar lines, one of the more recent ideas about the aims of higher education is integrative knowledge, which posits that expert knowledge involves a flexible integration of theoretical, practical, and reflective knowledge, and therefore the integration of these knowledges should be supported during a person's studies (see e.g., Tynjälä et al. 2003). While in essence these goals once again emphasize the epistemological dimensions of learning and the development of cognition during the course of higher education, the kind of development that is portrayed, necessitates, in essence, a broader way of understanding the process of learning than what is currently stated in connection to presenting these development goals.

In other words, the development of such skills may not, in our view, result from the mere construction of new knowledge based on one's previous frameworks, but rather a more profound restructuring of one's frameworks of meaning is called for, a restructuring that *transforms* one's perspective into a view that is more integrative and flexible and capable of critically assessing new knowledge. In effect, the change expected to take place during higher education is not a mere addition of knowledge to a cumulative set of previous knowledge, but instead is a change in disposition: the entire framework that orients a person in meaning making now alters (Kegan 2000; Mezirow 1991; 2009).

While this restructuring of meaning frameworks represents a new position vis-à-vis knowledge, such descriptions of the process only point to the epistemological aspects. As Kegan (1982) puts it:

> The Piagetian approach, viewing meaning making from the outside, descriptively, has powerfully advanced a conception of that activity as naturally *epistemological*; it is about the balancing and rebalancing of subject and object, or self and other. But what remains ignored from this approach is a consideration of the same activity from the inside, what Fingarette would call the "participative." From the point of view of the "self," then, what is at stake in preserving any given balance is the ultimate question of whether the "self" shall continue to be, a naturally *ontological matter*. (Kegan 1982, 12, emphasis added)

Kegan's point indicates that the meaning-making activity is not merely an act of assimilation or accommodation of meaning, as in the *knowing* perspective that, following Piaget, is emphasized in discussions on higher education. Rather, for the "self," meaning-making essentially entails a question of the continuation of its being. (Green & Mälkki 2013) When, in the practices of education, the learning processes are considered only from the perspective of knowing while the experiential and

ontological aspects are neglected, only a skeleton of learning is attained (see also Malinen 2000).

Without a fuller understanding of the learning process itself and of the kind of learning that is required of students, the ability of teachers to support learning remains limited. When we understand more fully the student experience in learning, we may be better able to understand teaching (see Palethorpe & Wilson 2011). Therefore, it is important to explore the student experience of transformation more deeply, to determine what the accepted goals actually mean for the students, how they experience the process, what it requires of them, what kinds of challenges emerge, and how the students may be supported.

THE EDGE OF KNOWING

In order to assess critically their prevailing knowledge and to reach deeper levels of understanding, students, it has often been observed, should be supported to reach the edges of their knowing. For instructors to have their students reach the edges of knowing may appear to be a desirable state in which new insights and viewpoints may be attained. For the student, however, the edge may be a more ambivalent experience, as will be argued below.

Let us stay a moment with this notion of the edge and explore what it may involve. The edge may refer to something that separates two states, at the end of something, and thus on the verge of something new. The edge in this case sets the moving boundary between what is known and what is not yet known (Berger 2004). If one is to gain new perspective on a familiar issue, then the frameworks through which one views and interprets experience must change. Because the new conception requires a shift in perspective, it is not fully comprehensible from within the previous frameworks, within the light of one's previous understandings. This shift, however, may not be something that happens as a mere jump from the old framework to the new (see Mälkki & Green 2013).

Rather, the change is something that involves a struggle at the liminal space, the in-between zone between the old and the new conceptions (Mälkki & Green 2013; see also Palethorpe & Wilson 2011). The learner finds himself in a state of uncertainty and often also a state of anxiety, as the previous knowing appears to be inadequate, while new understandings have yet to be formed and committed to. Thus, one struggles at the edge of one's knowing – between the actual and the potential plane, while neither is clear (see Berger 2004). One is faced with the challenge of letting go of the old conception in order to embrace a new one.

Giving up an old perspective, which is required if a new perspective is to be acquired, means letting go a viewpoint that not only used to guide one's interpretations and bring understandability to the world, but also that brought coherence and continuity to the experience of the self. A person has to let go of something that used to be part of the self (Mälkki & Green 2013). The notion of liminal space introduces the idea that to acquire a new perspective is not about epistemology alone. Dealing

with the edge of knowing entails a significant ontological aspect as well. In other words, in the liminal space there is a fundamental shift *from knowledge being at the heart of change and reconstructions to the self being challenged and ultimately, reconstructed.*

DEALING WITH THE EXPERIENCE OF THE EDGE

The above discussion on the challenges faced at the edge of knowing and letting go one's epistemological perspective suggests that the emotions signal the challenges to ways of knowing as well as to the self. In other words, we experience anxiety when our prevailing ways of knowing appear to be inadequate. These kinds of unpleasant emotions are indications of "edge-emotions," which we experience at the edges of our comfort zones (Mälkki 2010; 2011). When nothing questions our assumptions and we are able to interpret situations in light of our previous experiences, we feel reasonably comfortable, and thus, may be said to be in the comfort zone. By contrast, when our beliefs, attitudes, values, shared assumptions, sources of acceptance, relationships, and sense of understanding the world are questioned, we experience discomfort and anxiety. These unpleasant emotions are called edge-emotions, because they appear on the edges of our comfort zones. Basically, they signal a threat to our frameworks of meaning and to the current configuration of ourselves. (Mälkki 2010; 2011)

Both the pleasant emotions experienced in the comfort zone and the unpleasant edge-emotions have their basis in the biological function of emotions (Mälkki 2010; 2011). In essence, emotions support survival by orienting us automatically towards concrete action, such as fight, flight, or freeze in the event of danger; more generally, the emotions orient us to avoid pain and to seek comfort and security instead (Damasio 1999; 2003). Similarly, when our ways of knowing, our being, or our acting in the world are challenged and thus threaten our mental or social world, the emotions automatically orient us to action in order to manage the threat. This action, however, is carried out by the mental or cognitive tools we have at our disposal. We intend to return to the comfort zone, so as to feel comfortable and safe again: we tend to avoid dealing with the unpleasant issues that question our ways of knowing or being or interpret the issues in such a way that they no longer appear threatening (Mälkki 2010; 2011).

On a basic level, this mechanism supports the consistency of our meaning frameworks and identity, and, as such, is necessary. At the same time, however, it presents a challenge to learning and change: we humans have a natural resistance to change and a tendency to cling to our current meanings (Mälkki 2010; 2011).

If we want to overcome some of the limitations to learning and change brought up by the edge-emotions, then we need to learn to deal with the experience of the edge (Mälkki 2010; 2011; Mälkki & Green 2013). While the epistemological development would be the goal, the road to that development may require us to be more sensitive to the emotional aspects that stem from the ontological challenges posed by that development (see also Berger 2004; Meyer & Land 2005; Mälkki 2010). In the hope

of keeping up our image of ourselves as rational learners, we often wish to remove the unpleasant emotions from our experience before we have had time actually to live through, digest them, and hear what they wish to tell us. However, this often happens at the cost of limiting our cognitive functions to the automatic protection of our comfort zones, thus actually driving us further off from rationality (Mälkki 2011). Instead of being automatically oriented away from the unpleasantness at the edges of the comfort zone, we need to learn to recognize this pattern in our thinking (that is, of being automatically oriented towards the comfort zone). We may learn to offer the edge-emotions their own space in our conscious experience and accept and embrace them (Mälkki 2010; 2011; Mälkki & Green 2013). With this kind of acknowledgment and tolerance of the edge-emotions experienced in the passing moments of everyday life, we may be better able to enrich our rationality in thinking, deal with the edges of our knowing, support our own epistemological development, as well as rationality in thinking.

The above discussion explicates the premises of the anxiety we experience at the edge of knowing, how we may react to our anxiety, and how we may learn to negotiate the challenges at the edge. At the same time, the discussion shows the interlinked connections between cognition and emotion in learning and furthermore, exemplifies the need to recognize and explore in greater detail the interaction between the epistemological and the ontological tracks. The emotional and the ontological are not only "colorings of cognition," but also have a character of their own, which needs to be understood in order to grasp fully the processes of learning.

CROSSING THE PARALLEL TRACK: "WALK THE TALK"

At this stage, we feel that it is important to embed our theorizing in pedagogical practice. To do this, we have chosen to illustrate a technique relating to the "teaching" of a particularly complex topic. This example demonstrates some experiential methods used at the initial stage when student epistemological engagement is high. At this stage, an integrative approach of mind, body, and emotions is highlighted. High-level emotional engagement is then necessary in order to integrate the epistemological and ontological developmental tracks.

The knowledge base pertains to the complex history of the environmental movement, the largest global social movement to date. The complexity is perhaps clarified demonstrated by the following narrative. It is said that without doubt

the environment story is one of the most complicated and pressing stories of our time. It involves abstract and probabilistic science, labyrinthine laws, grandstanding politicians, speculative economics and the complex interplay of individuals and societies. (Stocking & Leonard 1990, 4).

In this approach to teaching, we demonstrate the potential practical opportunities for the teacher to shift to the parallel ontological track of student engagement and open up possibilities for transformation.

31

Initial Epistemological Engagement

The pedagogical approach lends itself to students' understanding of complex knowledge in that it has a history or chronology involving global locations, i.e., a time-space complexity. Learning such complex topics by reading textbooks and attending lectures can lead to a struggle to organize events, people, times, and places in spatial-chronological relationships in the human mind. This pedagogical method describes a student experience that uses an integrative whole-person approach to epistemological development in that there is a cognitive, corporeal (bodily), and affective engagement with this complexity.

Working both collaboratively and alone, students first research basic facts about organizations, relevant laws, government departments, and significant background events. After several weeks of knowledge building, the students move to constructing a map of events and facts, a multiple timeline history. Their basic tools for this mapping are colored cards and directional arrows.

In this epistemological development process, students initially produce significant amounts of information, many alternative interpretations, and tentative theorizing. Different groups of students then **walk** (kinaesthetic-bodily understanding) the time-space lines and record what they say as they walk. Thereby, they create a plethora of narratives in this *viva* style assessment. The mapping and narrative creation processes are supported by the color-coding of laminated cards involving several dimensions: *laws*, *voluntary* organizations, and *statutory* organizations, specially designated sites that are themselves created by laws and so forth. To this, the students add *significant publications* as a literature base. The notion of a learning "journey" underpins this initial, essentially **epistemological**, **focus**. The next stage involves working with the students' emotions, both positive and negative, to support the students journeying towards new epistemological challenges at the edge of their comfort zone.

The Parallel Ontological Track

This learning experience creates many differing narratives, with multiple stories and interpretations: all are developed from an initial skeletal history of basic knowledge or "facts." As complex multiple narratives accumulate, so do opportunities for higher levels of critical analysis. The development and acknowledgment of multiple narratives, oppositional positions, political interpretations, and concerns over diversity and equity begin to surface. Industrialization and the differing consumptive patterns of global peoples are questioned, as is the destruction of wildlife and the planet: these issues begin to create strong emotional reactions, with the students taking different positions. Various critically reflexive positions require complex judgments and emotional engagement. Tutors can take students to the *edge* zone by working with emotionally-charged issues that challenge the students and that also have the potential to result in the reconstruction of their perceptions and beliefs.

Teachers can purposefully approach the **edge zone** by pre-locating difficult, complex emotional topics at the edge of the students' **comfort zone.** Topics might include:

1. **Gender**: the role of women in the global environmental movement, for example; why gender is largely ignored; differing gender perspectives.
2. **Violence, riots and campaign tactics and strategies**: the anti-globalization movement, the old guard (the National Trust, the Royal Society for the Protection of Birds) vs. new-wave voluntary organizations (such as Earthfirst!, Greenpeace), working-class or elite-class engagement, the voluntary sector as a *coherent force*, or factions and tribes.
3. **Population growth:** consumption of world resources by richer nations.
4. **Power and politics**: are laws created for the good of everyone, or are they for the good of landowners/ruling classes, "farmers" whoever they are, destroyers, and protectors of the land.
5. **Colonialism**: environmentalism as a **western phenomenon** in developed countries. (Taken from Beard 2010)

DISCUSSION

Transmission of knowledge is no longer the central approach to teaching in higher education. Teaching has shifted significantly to be more transactional and transformational. Student transformation, however, is a complex topic: along with greater recognition of the importance of the development of the student ontological self as the goal of higher education, there are calls for such an ontological transformation to be "brought into view, and engaged with" (Barnett 2007, 9). Engagement with the notion of transformation is the central purpose of this chapter.

Transforming students involves transforming ourselves as teachers: often teachers talk about student transformation from the viewpoint of teachers themselves as facilitators of the process. What is often left unsaid is that, whatever the demands or challenges for the students, there are consequences for the teachers as well, involving their role and the management of their own epistemological and ontological tracks (see also Mälkki & Green 2013). In the interaction between the epistemological track and the ontological track, emotions appear to be significant territory. Mortiboys (2002), writing about the development of emotionally intelligent lecturers, views the culture of higher education as largely an emotion-free zone. The splitting and privileging of the rational over the affective has tended to limit more integrative thinking about the experience of learning, yet emotions are fundamental to the development of the epistemological and ontological self.

We suggest that the student experience of epistemological development may be somewhat ambivalent. The reconstruction of knowledge through transmission and transaction with lecturers appears to be outside the self, because it does not affect the self. On the other hand, transformation involves a new and more profound positioning of knowledge in relation to the self. The deeper engagement with knowledge involves

a struggle, with students being taken to the edge of their emotional selves, which often involves less pleasant emotions such as anxiety or anger. Essentially, in the edge-zone, the self is challenged and ultimately reconstructed. Here we have sought to connect our theoretical position with a practical example of teaching a complex subject, highlighting topics whereby lecturers might steer students to the edge and into epistemologically challenging territory.

ACKNOWLEDGEMENTS

REFERENCES

Abram, D. (1997). *The spell of the sensuous*. New York: Vintage Books.

Barnett, R. (2007). *A will to learn: Being a student in an age of uncertainty*. Maidenhead: Open University Press.

Beard, C., & Wilson, J. P. (2013). *Experiential learning: A handbook for education, training and coaching*. London: Kogan Page. (in press)

Beard, C. (2005). *Student achievement: the role of emotions in motivation to learn—emotional maps*. A pedagogical research project report, Higher Education Hospitality, Leisure, Sport and Tourism Network.

Beard, C. (2010). *The experiential toolkit*. London: Kogan Page.

Beard, C., Smith, K., & Clegg, S. (2007). Acknowledging the affective in higher education. *British Educational Research Journal*, *33*(2), 235–252.

Berger, J. (2004). Dancing on the threshold of meaning. Recognizing and understanding the growing edge. *Journal of Transformative Education*, *2*(4), 336–351.

Biggs, J. (2003). *Teaching for quality learning at university*. Maidenhead: Open University Press.

Blackie, M. A. L, Case, J. M., & Jawitz, J. (2010). Student-centredness: The link between transforming students and transforming ourselves. *Teaching in Higher Education*, *15*(6), 637–646.

Bloom, B., Masia, D. B., & Krathwohl, D. (1964). *Taxonomy of educational objectives. Volume II: The affective domain*. New York: David McKay.

Bloom, B. S. (1956). *Taxonomy of educational objectives, Handbook 1: The cognitive domain*. New York: David McKay.

Boler, M. (1999). *Feeling power: Emotions and education*. New York: Routledge.

Boud, D., & Miller, N. (1996). *Working with experience: Animating learning*. Oxon: Routledge.

Britzman, D. P. (1998). Lost subjects, contested objects: Toward a psychoanalytic inquiry of learning. Albany: State University of New York Press.

Brookfield, S. D. (2006). *The skillful teacher: On trust, technique and responsiveness in the classroom*. San Francisco: Jossey-Bass.

Crossman, J. (2007). The role of relationships and emotions in student perceptions of learning and assessment in higher education. *Higher Education Research and Development*, *26*(3), 313–327.

Damasio, A. R. (1995). *Emotion, reason and the human brain*. New York: G.P. Putnum's & Sons.

Damasio, A. R. (1999). *The feeling of what happens. The body and emotion in the making of consciousness*. New York: Hart Court Brace.

Damasio, A. R. (2010). *Self comes to mind. Constructing the conscious brain*. New York: Pantheon Books.

Davis, B., & Sumara, D. J. (1997). Cognition, complexity and teacher education. *Harvard Educational Review, 67*(1), 105–125.

Dillon, P. (2007, January). *A pedagogy of connection and boundary crossings: Methodological and epistemological transactions in working across and between disciplines.* Paper presented at 'Creativity or conformity? Building cultures of creativity in higher education', University of Wales and the Higher Education Academy, Cardiff.

Gagne, R. M. (1974). *Essentials of learning instruction.* Hinsdale, IL: Dryden Press.

Gallagher, S. (2005). *How the body shapes the mind.* Oxford: Oxford University Press.

Gardner, H. (1983). *Frames of mind: The theory of multiple intelligences.* New York: Basic Books.

Green, L., & Mälkki, K. (2013). Critique, reflection and ontological insecurity. Manuscript submitted for publication.

Habermas, J. (1988). *On the logic of social sciences* (S. Nicholsen & J. Stark, Trans.). Oxford: Polity Press.

Illeris, K. (2002). *The three dimensions of learning.* Malabar Fl.: Krieger Publishing.

Kegan, R. (1982). *The evolving self: Problem and process in human development.* Cambridge, MA: Harvard University Press.

Kegan, R. (2000). What "form" transforms? A constructive-developmental approach to transformative learning. In J. Mezirow (Ed.), *Learning as transformation. Critical perspectives on a theory in progress* (pp. 35–70). San Francisco: Jossey-Bass.

Ketonen, E., & Lonka, K. (2013). How are situational academic emotions related to teacher students' general learning profiles? In K. Tirri & E. Kuusisto (Eds.), *Interaction in Educational Domains* (pp. 103–114). Rotterdam: Sense Publishers.

Knowles, M. S. (1980). *The modern practice of adult education: From pedagogy to andragogy.* New York: Cambridge Books.

Lakoff, G., & Johnson, M. (1999). *Philosophy in the flesh.* New York: Basic books.

Lewin, K. (1951). *Field theory in social scie*nce. New York: Harper & Row.

Light, G., & Cox, R. (2001). *Learning and teaching in higher education: The reflective professional.* London: Paul Chapman.

Linnenbrink-Garcia, L., & Pekrun, R. (2011). Students' emotions and academic engagement: Introduction to the special issue. *Contemporary Educational Psychology*, *36*(2011), 1–3.

Malinen, A. (2000). *Towards the essence of adult experiential learning. A reading of the theories of Knowles*, *Kolb*, *Mezirow*, *Revans and Schön.* Jyväskylä: Sophi, University of Jyväskylä.

Meyer, J. H. F., & Land, R. (2005). Threshold concepts and troublesome knowledge (2): Epistemological considerations and a conceptual framework for teaching and learning. *Higher Education*, *49*, 373–388.

Mezirow, J. (1991). *Transformative dimensions of adult Learning.* San Francisco-Oxford: Jossey-Bass.

Mezirow, J. (2009). An overview on transformative learning. In K. Illeris (Ed.), *Contemporary theories of learning. Learning theorists in their own words* (pp. 90–105). London: Routledge.

Mortiboys, A. (2002). *The emotionally intelligent lecturer.* Birmingham: SEDA Publications.

Mälkki, K. (2010). Building on Mezirow's theory of transformative learning: Theorizing the challenges to reflection. *Journal of Transformative Education*, *8*(1), 42–62.

Mälkki, K. (2011). *Theorizing the nature of reflection.* (Doctoral dissertation). University of Helsinki: Institute of Behavioural Sciences. Retrieved from https://helda.helsinki.fi/bitstream/handle/10138/26421/theorizi.pdf?sequence=1

Mälkki, K., & Green, L. (2013). Navigational aids: The phenomenology of transformative learning. Manuscript submitted for publication.

Palethorpe, R., & Wilson, J. P. (2011). Learning in the panic zone: strategies for managing learner anxiety. *Journal of European Industrial Training*, *35*(5), 420–438.

Pavlov, I. (1927). *Conditioned reflexes: An investigation of the physiological activity of the cerebral cortex* (G. V. Anrep, Trans.). London: Oxford University Press.

Pekrun, R., Goetz, T., & Titz, W. (2002). Academic emotions in students' self-regulated learning and achievement: A program of qualitative and quantitative research. *Educational psychologist*, *37*(2), 91–105.

Ramsden, P. (2003). *Learning to teach in higher education.* London: Routledge.

Rogers, C. R. (1969). *Freedom to learn.* Columbus, OH: Charles E. Merrill.

Rowe, A. D. (2013). *Feedback in higher education: Personal, relational and emotional dimensions.* (Unpublished doctoral dissertation). Australia: Macquarie University.

Shapiro, L. (2011). Embodied cognition. London and New York: Routledge.

Sheets-Johnstone, M. (2009). *The corporeal turn, an interdisciplinary reader.* Exeter: Imprint Academic.

Skinner, B. (1974). *Adult behavior.* London: Jonathan Cape.

Sterling, S. (2001). *Sustainable education – Re-Visioning learning and change.* Schumacher Society Briefing no. 6. Dartington: Green Books.

Sterling, S. (2003). *Whole systems thinking as a basis for paradigm change in education – Explorations in the context of sustainability.* (Doctoral dissertation). University of Bath: Centre for Research in Education and the Environment. Retrieved from http://www.bath.ac.uk/cree/sterling/sterlingthesis.pdf

Stocking, H., & Leonard, J. P. (1990). The greening of the media. *Columbia Journalism Review*, 37–44.

Tynjälä, P., Välimaa, J., & Sarja, A. (2003). Pedagogical perspectives on the relationships between higher education and working life. *Higher Education*, *46*, 146–166.

Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes.* (M. Cole, V. John-Steiner, S. Scribner, & E. Souberman, Eds.). Massachusetts, London, England: Harvard University Press Cambridge.

Young, M. (2008). *Bringing knowledge back in: From social constructivism to social realism in the sociology of education.* Oxon: Routledge.

AFFILIATIONS

Colin Beard
Sheffield Business School,
Sheffield Hallam University

Kaisu Mälkki
Department of Teacher Education,
University of Helsinki